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THE

MADRAS QUARTERLY JOURNAL

OF

MEDICAL SCIENCE.

SIXTH VOLUME.

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ORIGINAL ESSAYS.

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[*Communicated by the Principal Inspector General Medical Department.*]

I DESIRE, in compliance with a request preferred by the Head of the Department, to submit a Report on the substance termed Hydrochlorate of Berberine, obtained, according to Dr. Stewart's paper, vide page 346 of the Madras Quarterly Journal for April 1861, by the following processes.

1st.—A watery extract is prepared from the powdered bark and root. 2nd.—This extract is acted on by boiling alcohol, which brings the peculiar principle resident in the plant into solution. This solution is then separated from inert residue, by filtration or decantation. 3rd.—The alcoholic solution is then subjected to distillation, "until it is reduced to half its quantity, or until it attains the consistency of liqueure." It would thus appear, if the author's meaning is correctly

apprehended, that it is the *residue* left in the retort, and not the distillate that he employs; if so, the real process is evaporation only, and the concentration consequent thereon is all that is required to enable the substance to crystallize. The crystals thus obtained, after having been washed in cold alcohol and water, are dissolved in boiling water, and heated with hydrochloric acid "to saturation;" but how this is known, the author has not stated, neither has he given any statements relative to the behaviour of the crystals obtained previous to the addition of hydrochloric acid. It would have been satisfactory had he informed his readers if these crystals gave any evidence of alkaline reaction? or whether they were altogether neutral? what may have been their crystalline form? what amount of real acid, or acid of known sp. gr., a given weight (of these crystals) required for saturation, &c., &c. In the absence of the information just noticed Dr. Stewart's paper was again referred to, in the hope that the authors he has quoted might afford some further data, that would help to establish the nature of the substance he recommends so strongly. This however, unfortunately, is left undecided, unless bare statements, that it is an alkaloid, be accepted, as proofs, but in so far, as has been shewn, there appears little or nothing beyond the inference to be drawn from its medicinal properties to substantiate his claim.

Dr. Stewart suggests as a substitute for Quinine the employment of the Tincture and the *Alkaloid*. Professor Simpson, quoting ancient authors, says that Lykion or Berberis is valuable in cœliac and dysenteric affections, &c. Dr. Thompson says, it is given in Bavaria as a substitute for Quinine, &c. &c.; and Sir W. O'Shaughnessy regards it as a febrifuge, &c., &c.

Dr. Stewart states also that in consequence of the pressure of other duties, he has only been able "to prepare a small quantity of the alkaloid (crystalline) as a specimen. The crystals are of a bright yellow silky lustre and may be termed Hydrochlorate of Berberine, &c., &c." Dr. Stewart then gives the medicinal effects he has observed, and the modes of administration he recommends, finally he refers to a paper by Dr. Stiven which I have not seen, but which I presume, from the extracts given, refers more to medicinal properties and effects than to constitution. The nature of the substitute seems indeed to have attracted little notice, most

persons, probably, assuming that this had been already determined by some competent authority.

This certainly was my own opinion, and it was not until my attention was drawn to the subject, that I found Sir W. O'Shaughnessy did not regard the crystals obtained from the Berberis, as alkaloidal, but as neutral, that I became aware of the real nature of the enquiry I was called on to make. Not having myself prepared the substance to be examined, and not having any of the bark or root of the plant from which it had been obtained, I was, in the first instance, deprived of a certain amount of information, and, in the second, of a free source of supply—the latter circumstance, together with the small quantity of the substance at hand, necessarily limited the sphere of my operations. The details of which are the following—

The substance to be examined presented to the unaided eye, the appearance of a bright yellow powder, partly crystalline which gave out no odor, and which, when placed on the tongue, produced only a faint bitter taste.

An aqueous solution of the substance after sufficient evaporation, was placed under the microscope (magnifying power 200 diameters), numerous beautiful yellow prismatic crystals were evident. Under Ross' large instrument (magnifying power 420 diameters) the same appearances, proportionately enlarged, were presented. The substance crystallized from an alcoholic solution, gave still finer and larger crystals. As no other kind of matter except these yellow prismatic crystals could be detected by microscopic observation, and as these crystals only varied in size and brilliancy according to the magnifying power employed, the inference is, that the substance is homogeneous, and sufficiently pure for analysis.

The solubility of the substance in cold and hot water, as well as in alcohol, having already been proved, no further experiments with this object were made, except one, with Ether, in which menstruum it was found to be insoluble—a behaviour rather unexpected, but marking clearly the absence of anything analogous to the character of fats, which this solvent readily takes up.

Although there was no reason to suspect the presence of any inorganic matter, its absence was now determined by

exposing a few grains of the substance on platinum foil to a high temperature, they burnt off entirely, and readily, without leaving any residue.

The aqueous solution (a small portion) was subjected to the action of red and blue Litmus papers, no change whatever ensued. This, however, demonstrates nothing more than that the substance, if a salt, is neutral. Had the crystals obtained previous to the addition of acid (dissolved in distilled water) been subjected to such trials—definite information to a certain extent would have been obtained; it must however be kept in mind that a substance may be capable of entering into various combinations with acids and metallic compounds, and yet evidence no *alkaline reaction;* if, however, a substance is capable of neutralizing acids, it ranks as a base—indeed many very *powerful bases* are neutral to test papers, but strictly speaking no basic substance should be termed an alkaloid unless it is capable of producing some alkaline reaction, however faint.

Treated by weak Nitric and Hydrochloric acids, separate portions of the solution shewed precipitates, which redissolved on boiling Dilute Sulphuric acid, produced turbidity in the cold, but it did not so readily disappear by boiling, as in the two former instances. Had I possessed the substances in sufficient quantity, the nature of the precipitates mentioned and the cause of this behaviour would have been investigated. As I was circumstanced this was impracticable.

Separate portions of solution were now treated by the fixed alkalies—Ammonia, Alkaline Carbonates, and Lime water. Color in some cases rather deeper, but no precipitate obtainable by either of the agents named. From this behaviour it becomes evident that the substance differs (whether alkaloid or base,) from the general mode of action pertaining to the class of bodies to which it is supposed to belong. Quinine and Morphine are readily thrown down from solutions of their salts—by alkalies—and analogous bodies if not so readily obtained by alkalies, are brought down by the alkaline carbonates, lime water, &c.

Separate portions of the solution were further treated by the following re-agents. The greater number of these, as

shewn below, afforded no precipitates, nor did they appear to produce change of any kind in the solution.

Re-agents.	Effects.
2 Na O, H O, P O_5.....	No reaction.
K_2 Cfy.....	Idem.
K_3 Cfdy.....	,,
Fe_2 Cl_3.....	,,
Fe O, S O_3.....	,,
Ni O, So_3.....	,,
Co Cl. (the pink protochloride).....	,,
As O_5.....	,,
Cu O, S O_3	Green coloration produced by the mixture of the blue and yellow solutions. Ammonia added, gave a fine green inclining to purple.
Pb O, Ac O_3.....	Produced a perceptible precipitate, only when aided by a few drops of Liq. Ammonia.
K O, S O_3, Al_2 O_3, S O_3 +24 Aq.....	Did not precipitate the peculiar matter even with the aid of Ammonia, the Al_2 O_3 precipitating *white*, while the solution remained *yellow*. This behaviour appears to dispose of the idea that the substance belongs to the coloring matters. Though it is a fine yellow capable of staining cloth.
Sn Cl, + 3 H O.....	Fine yellow precipitate, of a flocculent appearance, supernatant solution perfectly clear; the whole of the peculiar substance in solution has therefore been precipitated. This behaviour being opposed to that exhibited when salts of Al_2 O_3 are employed, leaves the nature of the substance, so far as its properties as a coloring matter are involved, still doubtful, and* may perhaps have been one of grounds on which Buchner regarded it simply as a coloring matter.

* Buchner's opinion was not known at the time of making this experiment.

K O, Sb O_3, C_8 H_4 O_{10}, 2 HO..... Faint yellow precipitate, solution scarcely dulled.

Gallo-Tannic A. C_{54} H_{22} O_{34}, (Strecker) employed in the form of Tr: of Galls..... } Faint yellowish brown precipitate.

K O, 2 Cr O_3..... Yellow flocculent precipitate.

Au Cl_3..... Reddish precipitate.

Pt Cl_2..... Yellow precipitate.

Pd Cl..... Dull yellow precipitate.

Hg Cl..... Yellow precipitate after some time, which redissolves in excess of H O.—a behaviour which was subsequently ascertained to be common to many of these precipitates.

Ag O, N O_5..... H O N O_5, added (a few drops) to the solution previous to the silver salt, faint turbidity, suggesting rather the presence of Hcl. as impurity than as a constituent of a definite compound. Ammonia added to the above, instead of clearing the compound, produced a dusky flocculent precipitate soluble in excess of water. Reflection on the foregoing experiments suggested that if *free* Hcl. was present with the substance, it would give the ordinary reaction. To ascertain this, one drop of dilute Hcl. was added to about one oz. of solution. A small portion of this mixture, after the addition of a drop of H O, N O_5 was treated with Ag O, N O_5, a white precipitate was instantly obtained. This showed that if Hcl. was present, it must be in combination, and not as impurity; the small trace of precipitate obtained by silver salt when added to the solution, was however altogether unsatisfactory; it was therefore determined to destroy the organic matter and fix the Cl., if present, by K O, H O.—a process of this kind seemed the more necessary, when the whole of the reactions given were considered. It seemed in the highest degree improbable that so many precipitates, obtained by such various agents, could be indefinite and analogous to the Lakes and other such compounds particularly, as with alumina no such action could be obtained. On the other hand, supposing it to be a Hydrochlorate, the base does not precipitate in the usual way. No alkaline solution nor carbonated

alkali in solution being competent to detach it from the acid in question, or admitting that they do detach it, they must simultaneously possess the power of dissolving it, or it must be soluble in such a minute quantity of water, as to hinder the observer from noting what is taking place.

At this period of the enquiry I learned that Buchner (a name that cannot be mentioned without respect) had stated in one of the Foreign Scientific Journals, which I cannot call to mind, that the peculiar crystalline substance obtainable from Berberis plant, was a neutral body, *sui-generis*, belonging rather to the list of coloring matters than to any other: this agreed with the opinion of Sir William O'Shaughnessy already quoted. Still the absence of direct chemical proof, was unsatisfactory, the number of precipitates obtained by the action of various salts, suspicious, and, added to the behaviour of the substance with alumina salts not such as to confirm the idea that the substance was a peculiar coloring matter. With little time to devote to this enquiry, and with a very small amount of substance left, I resolved to determine the presence of Cl. before commencing any further operations.

The process adopted was as follows :—

Pure Carbonate of Potash was dissolved in Aq. Destil. which was then added to 6 grains of the substance dissolved likewise in distilled water, the mixed solutions were evaporated to dryness in a platinum dish, the dried mass was next subjected to high temperature, and kept so till all organic matter was destroyed, the residue in the dish was then extracted by Aq. Destil. made slightly acid by H O, N O_5, and finally treated by Ag O, N O_5. The well known precipitate at once came down, deciding at the same time the nature of the compound under examination. After washing carefully, drying, weighing, and calculating the proportion of Chlorine found, it was evident that the low sp. gr. of the substance had escaped notice. Having thus corrected first impressions, I was naturally anxious to be in a position to state something definite relative to the base itself, yet, as before stated, with my hands full of other kinds of occupation, I hesitated to begin a fresh series of enquiries, requiring much greater care and nicety in determination as well as a good deal of time. The first step in this direction would necessarily be, to endeavour to procure a fresh supply of root and bark from which to prepare the base in sufficient quantity; had

I been able to appeal as a standard of comparison to any accurate and established determinations of chemical constitutions, the anticipated labor might be avoided by enabling me to identify the constitution of the compound I had just proved to contain Chlorine. While searching for the required information, I found in the 6th Vol. of the Pharmaceutical Journal, pages 278 and 279, that Fleitmann had published a most complete and elaborate examination of the peculiar substance obtained from the Berberis, of which a short and meagre extract only is given, occupying less than half one of the pages of the Journal; fortunately several of Fleitmann's* formulæ are given, some of the reactions that he describes, are also given. The compounds I had obtained by means of Bichromate of Potash, Protochloride of Tin, and Bichloride of Platinum, led me strongly to suspect identity of composition; this however was of no consequence, as by means of the Formulæ referred to, identification or the reverse readily admitted of proof.

With this object in view, I weighed out seven grains of substance (which nearly exhausted my supply), and exposed it in the water-bath to a temperature of 212° until the weight became constant, the loss equalled one grain, and the residue of dried substance = six grains. This treated as before described, viz., by Carbonate of Potash, evaporation to dryness, ignition, extraction by Aq. Destil., neutralization by H O N O_5 acidulated by a few drops of the acid in excess, precipitation by the Silver Salt, afforded, after all the usual precautions, 2·1000 grains of Ag Cl., which by the following proportion is equal to ·5195 Chlorine, since if

$$\left.\begin{matrix}108\cdot0\ \text{Ag.}\\ 35\cdot5\ \text{Cl.}\end{matrix}\right\}\ \underset{\text{Ag. Cl.}}{143\cdot5}\ :\ \underset{\text{Cl.}}{35\cdot5}\ ::\ \underset{\text{Ag. Cl.}}{2\cdot100}\ :\ \text{X and}$$

X = ·5195 Chlorine.

Now on turning to Fleitmann's Formulæ, it will be found that he gives C_{42} H_{18} N O_9 + H. Cl + H O for that of the Hydrochlorate of Berberine crystals, and dried at 212° F. The equivalent for Hydrated Berberine, according to the above, will therefore be 366·0, in other words the equivalent of the Hydrated Hydrochlorate is 401·5, because 366 combine with 35·5 to form it, and as six grains of the dried substance yielded ·5195 of Chlorine, it is clear that ·5195 Cl. was in combination with 5,4800 of the Hydrated Berberine,

* These Formulæ are transcribed at the conclusion of this paper.

which, by the following proportion agrees very closely with that which Fleitmann's figures give.

Hydra. of B. Cl. Hydra. of B.
Since—If 401·5 : 35·5 :: 6·0000 : X
and X = ·5305 Chlorine.

Now ·5305 the calculated amount of Cl., and ·5195 the amount actually found coincide so nearly, that nothing more could be desired since it is an accepted axiom in all philosophical enquiries, that when the same result can be reached from different starting points, and by different processes, such results can only be regarded as the exponents of the truth; and if we admit this we cannot hesitate any longer to regard the compound examined as a true salt of definite constitution, the acid being in combination with a powerful base—destitute, however, if we accept the testimony of Buchner and O'Shaughnessy, of the characters which constitute an Alkaloid.

After the identification of the compound examined, I was obliged to put aside the further prosecution of this investigation for nearly a fortnight, indeed from the pressure of other business, and from the delay to be encountered, if I wrote to the Hills for a fresh supply of bark and root. I had intended to send in the paper, in its present state, it would however have been unsatisfactory and mortifying to leave the primary question unanswered, and I therefore hesitated; while undetermined, I found that I had still a little of the nearly three grains Hydrochlorate remaining in the bottles, enough perhaps for a final experiment, if I could hit on any method of separating the acid: the ordinary means had altogether failed, (as shewn in the earlier part of this paper), I had therefore to devise a method that, without affecting the organic constituent, would entirely separate it from the Hcl. After some consideration it appeared to me that the recent Oxide of Silver would answer my purpose, if entirely freed from the last trace of the precipitant. I consequently precipitated the Oxide of Silver from the Nitrate, by Potash. The brown oxide thus precipitated was thrown into a beaker which was nearly filled with distilled water, the oxide was then washed by stirring for some time continuously. After subsidence, the supernatant water poured off, this process was several times repeated, but still the washing water yielded alkaline reaction; it was however repeated till only a trace of alkaline reaction could be detected, the oxide

after subsidence, and decantation of the greater part of the washing water, was poured on a filter, on which it was again washed by boiling distilled water, till not the faintest trace of alkaline reaction on test paper could be detected. The whole of the hydrochlorate remaining, having been dissolved in distilled water, the oxide of silver perfectly free from alkali and quite recent, was washed into it, by a little more distilled water, after careful stirring, the beaker containing the hydrochlorate and oxide was covered by a glass plate, and placed in a cupboard to digest for 24 hours. The next day the beaker was examined and the soluble contents poured off from the dense greyish brown precipitate at the bottom, which was now heated by diluted nitric acid (perfectly pure) and placed on a sand bath, over a gentle heat, at which it was kept till the excess of oxide of silver was entirely dissolved and nothing was left in the form of precipitate; but the *Chloride of Silver* which when the supernatant fluid was poured off, and it had been thoroughly washed, appeared in the accustomed form of a white curdy precipitate, portions treated by Ammonia Liq., and by boiling strong Nitric acid fully determined its nature, and the potency of the Oxide of Silver to effect the withdrawal of the Cl. from the base,—it now only remained to test the solution, and thus to decide its pretensions to the character of an alkaloid—this was accordingly done, slips of reddened litmus paper were found in every instance to be wholly unaltered, though repeatedly immersed. Berberine is therefore not an alkaloid, though a strong base sufficiently powerful to neutralize strong acids, and to form with them salts of neutral and definite character. The Hydrochlorate which is directly formed by the union of the base with the acid, is perfectly neutral, and perfectly definite in constitution, and as this paper shews identical with the compound analyzed by Fleitmann.

Fleitmann's Formulæ.

1. Crystallized Berberine....$C_{42}\ H_{18}\ NO_9 + 12\ HO$.
2. do. do. dried at 212° F.....$C_{42}\ H_{18}\ NO_9, 2\ HO$.
3. Crystallized Hydrochlorate of Berberine.....$C_{42}\ H_{18}\ NO_9, H\ Cl. + 5\ HO$.
4. Hydrochlorate of Berberine dried at 212° F.....$C_{42}\ H_{18}\ NO_4, H\ Cl, HO$.

5. Supersulphate of Berberine.....C_{42} H_{18} NO_9, 2 SO_3 + 2 HO.
6. Superchromate of Berberine.....C_{42} H_{18} NO_9, 2 Cr O_3
7. Platinum Chloride of Berberine.....C_{42} H_{18} NO_9, Hcl. Pt Cl_2.

ART. II.—*A Sketch of Malabar.* By EDWARD SOMERSET CLEVELAND, M.D., late Civil Surgeon, Malabar.

LUXURIANT as Malabar is, with its woods, valleys and waters, its climate is essentially enervating and miasmal.

The traditionary belief among its Hindoo inhabitants is, that one of their deities caused the sea to retire from the western range of mountains and left dry that narrow strip of territory called in their books Muly Yalum, vulgarly, Muleam and Malabar.

It is said to have been bestowed on different tribes of Brahmins, on condition that the produce of the soil should be appropriated to the support of certain temples for divine worship, in expiation of the blood shed by this said deity, in the course of numerous wars.

Such, is the fabulous origin of this country, and many of the ancient and even modern rights and claims of its Hindoo inhabitants are based upon such belief.

This strip of land between the Western Ghauts and the ocean, runs diagonally in a south-easterly direction, extending from 10° 12′ to 12° 50′ North latitude, and, between the parallels of 75° 10′ and 75° 50′ East longitude. Its northern extremity is about 25 miles in breadth; the southern about 70; its limits along the Coast extend to nearly 190 miles. Canara is to its north; Cochin to its south; Coorg and Mysore east, and Coimbatore south-east; while its shores on its western aspect are washed by the Indian ocean.

Eastward, it is mountainous and skirted with forests.

The country undulating and intersected with its rivers and backwaters, and richly clothed with vegetation like most Western Coasts, is beautiful, but pregnant with the elements

of malaria under the tropical sun, it is unquestionably treacherous.

The superficial area of the District is 6,262 square miles, about 1,545 or nearly a fourth of which is under cultivation. It is divided into 10 Talooks containing 433 Umshoms—villages, and 2,603 Deshoms—hamlets.

The soil, for the most part, is a rich ferruginous red earth, abounding in laterite. Fossil shells are imbedded in the laterite, which, at some depth from the surface, is as soft as clay and becomes hard on exposure to the air; for building purposes it is quarried in large brick-shaped blocks; being apt to crack much, it is a material not calculated to give solidity and security to bridges and arches especially, without a coating of a protective medium against the action of the atmosphere, hence the frequent mishaps to bridges built of this substance.

Along the Coast the soil is sandy, with a superstratum of laterite débris and is very porous and absorbent, no accumulations of water remaining on the surface after a fall of rain, except where embanked and preserved during the monsoon for purposes of irrigation.

From the ore, stone and sand, iron is plentifully obtained in the District and, at the East Indian Iron Company's Work near Beypoor, is now being turned to good account by Mr. Maylor, who, by the Bessamer process, manufactures steel of very fine quality.

Gold, in small quantities, is found in the beds of some rivers and streams in Malabar.

The cultivation of rice and grain yields two crops—the Kani, the September crop, and the Margarom, the January crop; a third even, is sometimes obtained in the neighbourhood of tanks and reservoirs.

Irrigation is carried on by the primitive and effective means of embanking a level tract of country into a series of fields, the accumulated fall of rain during the South-west and North-east monsoons forming a large body of water, which is allowed to flow from one to the next by cuttings or channels, readily blocked up, and regulating the due supply.

The South-west monsoon commences early in June. Dark banks of clouds gather about the western horizon, veering southward towards the latter end of May; electricity plays its part in the peals of thunder and vivid flashes of lightning

that follow; and amid the turbulent grandeur of sea and sky, the monsoon is ushered in with heavy gales and much rain.

There is an uninterrupted downfall of rain for awhile; from the nature of the soil noticed, it is quickly absorbed, and the roads are rendered passable in a few hours; the sky clearing, fair weather sets in for a few days, till again succeeded by wind and rain.

There is a degree of coolness and purity of the atmosphere during such breaks in the monsoon, making it a pleasant season than otherwise.

The average downfall of rain is little over 120 inches. Strange variations are observed, in its registry throughout the district, among the weather-wise, ascribable along the Coast generally, to a rain-guage being situated within the influence of the sea spray, a white cloud of which may be seen to be wafted in some considerable distance: or, a pluviometer may be found planted under the eaves of a house, to windward of a tope of trees or range of buildings, gathering the washings of these in addition to the direct fall.

Need anything be said of the dampness of this season on the West Coast? How abundantly the air is surcharged with watery vapour is testified in the speedy destruction of most articles, especially anything in shape of steel or leather; surgical instruments soon put on the rusty red coat of rough surface; books need the brushing bestowed on boots; watches have a disposition to mutely resign all pretensions to excellence.

There is a close oppressive state of atmosphere peculiar to this region and recognized as true Malabar weather, generating a moist heat, having a sedative, vapour-bathish effect, lowering the heart's action and inducing mental depression, which is doubtless due to the subtle agency of electricity; more of it prevailing in April and September generally, when storms and showers threaten, than at other periods.

Late in October the wind shifts to the east, and the North-east monsoon sets in with showers of rain and distant thunder. The weather now becomes cool and enjoyable; after the gathering of the first crop of grain the sportsman seeks snipe about the wet paddy grounds.

This, however, is not unusually a sickly moment with natives; the process of evaporation from the earth's surface,

after the rains, is in full activity. Cool land winds too prevail now till about February, and the mercury drops to 70° and even to 65° Fahr.

No change of weather brings so much sickness as the periodic Coast winds.

The "Land wind" sets in about 3 A.M. in cool currents, and hourly gathering force sweeps down the Ghauts, taking up the products of vegetable decay in its passage, and impregnating such tracts of country with malaria in which they may become concentrated.

It plays the double part in the animal economy of checking cutaneous action, and determining circulation and secretion to the abdominal viscera. The sickening sleeper may at the same time imbibe the poisonous air which is to prostrate him with Dysentery, or Cholera: or a Quotidian, or other Fever is originated, as the one or other primary action may determine.

The "Alongshore wind," the Coast N. N. Wester, obeys no law of regularity as to season, though it prevails more during the hot months from February to May, and blows for three or four hours in the afternoon; if wanting in the elements of vegetable decay to render it an equally pestilential current, it obtains the animal exuviæ of the barren beach—the products of the sea on the one hand, and the deposit of large villages and towns on the other.

If pus globules are detected by the aëroscope in the atmosphere of a ward where purulent opthalmia prevails, the day may not be far distant when such an instrument may aid us in accurately testing its foreign corrupt constituents and obtaining a more comprehensive knowledge of those subtle specific poisons generalized as Malaria—determining to which gaseous combination the induction of small-pox may be ascribed, or cholera be traced. Without the knowledge of cause and effect, the first steps in diagnosis and prognosis, the treatment in disease must be empiric.

The expansibility of air by heat gives rise to the phenomena of winds. If variable and uncertain in temperate regions, a remarkable regularity prevails in tropical. To say nothing of trade winds which furnish so beautiful an example in both hemispheres, it does not escape the notice of the most casual observer, with what regularity the sea breeze

sets in. Four hours of the oblique rays of the rising sun in this latitude imparts sufficient heat by absorption to the lowest stratum of air, which, expanding, rises, and gives place to another, thus establishing an ascending current—the colder and heavier air supplying the vacuum occasioned. So, affording an illustration of the first law of heat, the sea breeze is found to set in here with beautiful regularity, about 10 A. M., and subside with the declining sun.

The most complete account of Malabar is the Report of the Joint Commissioners Duncan and Page in 1793, of which only one printed copy in the possession of Government is said to be extant. The able report of Sir Thomas Munro, "First Commissioner for the Revision of the Judicial System in the Province of Malabar," was written in 1817, twenty-four years later.

Taking a brief historic digest of the former, we are told that the ancient form of Government on this Coast was supposed to be a Republican, set up by the ancient proprietors of the land—the Nambouri Brahmins; subsequently a Permal or Governor was received.

From the successful sway and sovereignty of one of these officers, named Sheo Ram, Shermanoo Permaloo, or Cherumah Permal, who reigned about A. D. 793, everything in the country appears to have taken origin. The present race of Rajahs—the chief Nairs and proprietors—the Lords and Landholders of Malabar, trace their rights and claims to sovereignty and proprietorship, and assert uniformly to have derived the grant made to their ancestors by Shermanoo Permaloo. It is believed, he became a convert to Mahomedanism and made a division of his country prior to quitting it for Arabia.

One Maan Vikerma, an Erary, (Cowherd caste) who had come from the banks of the Cauvery near Erode, is said to have materially assisted Shermanoo in his early successes in Malabar, on which account Shermanoo bestowed upon him his abode at Calicut, left him his sword and other insignia of dignity, and instructed him to extend his dominions by force of arms. This adventurer, Maan Vikerma, the ancestor of the present Samoory or Zamorin, acted up to the stipulation, and in the true spirit of the original grant his descendants made new conquests and maintained their hold upon the country with Sheo Ram's—Shermanoo's sword—

which, to this day, is preserved as a relic of adoration among them.

For a succession of centuries the governing Rajahs of Malabar have been of the *Khetrie* or second tribe of Hindoos, except the two principal, the Cherikul Rajah and the Zamorin, who are of the *Erary*, or Cowherd caste.

From time immemorial the mode of succession (the Nair law,) has been through the female line—a man's sister's children inheriting, not his own sons or children.

Nairs are a race of *Soodras* or fourth general tribe of Hindoos.

Tiers are cultivators of the soil, as are the degraded *Cherumahs*. The cultivators of hill tracts are the *Punyers, Kooroombers* and *Mulaseers*.

Mookwars are the tribes of Fishermen along the Coast.

Mapillahs are descendants of Mahommedan converts—they are an energetic and thriving race of traders.

Malabar was discovered by the early European settlers—the Portuguese, who, under Vasco de Gama, first landed, as we are told, at Calicut, in 1496.

Upon the decline of the Portuguese power, the Dutch held possession of the country for a brief period.

The English succeeded, according to the Tellicherry records, in 1664.

It was in the reign of Elizabeth, A. D. 1600, that a few London merchants obtained a Charter as "The Governor and Company of Merchants trading to the East Indies." And it never was contemplated that a Company, originally consisting of a few enterprising merchants, could, even by the most successful policy, have established themselves the controllers of an immense empire, independent of, and anomalous to, the constitution of England; or, that privileges granted to stimulate the enterprise of individuals, would have been the ground of monopoly, which, like an enormous incubus, should oppress the very nation. Requiescat in pace!

The first conquest of Malabar by Hyder Ali Khan was in 1766. He re-took it in 1774, and died in 1782.

The first capture of Mahè was in 1779, its second reduction in 1793, and peace took place in 1784.

When Hyder first invaded this country, it was divided among a number of petty Rajahs and Military Chiefs, of whom the *Zamorin* was the most powerful.

It is pertinent to note that this Zamorin family consists of the following members. 1st. The *Zamorin* or Senior. 2nd. The *Eralpaar* or 2nd Rajah. 3rd. The *Munahpaar* or 3rd Rajah. 4th. The *Melampaar* or 4th Rajah. 5th. The *Neree Erepoo*—Erepoo being the place where all the Zamorin family 'ought to be born.' Such are the five superior grades, having separate houses and bearing ever afterwards their titles, till they attain their seniority.

The next subordinates to them are the Colgum Rajahs. 1st. The *Ambary Colgum.* 2nd. The *Poodio Colgum.* 3rd. The *Kurki Colgum.* 4th. The *Peringam Colgum.*

The internal administration of this country in former times may fittingly receive a brief notice ; before passing on to consider its present state.

The *Deswai* was the Head of a Village—a functionary who had the direction of all its affairs and marched at the head of his village when it constituted a column of an army.

The *Pramani* was an arbitrator in each village, in differences, before they were brought up to the Punchayet or Court. Any intelligent man might be selected as the Pramani.

The *Narwai* was the chief of a Naur or District to whom the Deswai and Pramani carried their complaints. He was a kind of District Deswai, enjoying much the same powers in the district as the Deswai in the village. The Narwai had a small share in every branch of the Rajah's revenue. He was the chief police and judicial officer. He was the Military chief of the district and bound to attend the Rajah in the field with each Deswai at the head of the combatants of each village.

To keep up a martial spirit among the Nairs, he conducted mock or rather real combats, resulting in loss of life, in times of peace. It is customary among them to this day to flourish a sword and red painted shield as in mock combat on ceremonial occasions.

The *Rajah* was the possessor of extensive domains—the sole owner of some, and part owner of other, villages, besides other sources of revenue. The Punchayet or Court was held in his presence, if not in that of an appointed minister.

Such was the administration of Malabar as recorded by Sir Thomas Munro, when Hyder invaded the country.

We pass on to the rule of his son Tippoo Sultan, who expelled all Rajahs and entrusted the administration to Soubadars and Foujdars sent from Seringapatam. Small contiguous villages were now incorporated into what was called a *Terrah.*

From 40 to 80 such Terrahs were formed into a Naur. In place of the Deswai each village had its chief called *Mookyist.*

Tippoo's first project when he entered Malabar, as its Sovereign, in 1788 was the removal of its capital Calicut to Faroke, which is about six miles south of it.

He here laid the foundation of a fort and city to which he gave the name Faruckabad.

It being much against the feelings of the natives they returned to Calicut, and scarcely a vestige of Tippoo's fort and city now remains.

His persecution of the Malabar Brahmins was barbarous. They were seized by his orders, and as examples to inferior castes to become Mahommedans, were circumcised, and made to eat beef. 30,000 of them in consequence fled to Travancore.

Tippoo's troops were finally expelled in 1791. The fort at Cannanore surrendered without conditions to General Abercromby, and that at Faruckabad was taken by Colonel Hartley. The people of the country then returned to it and the treaty of peace was concluded the following year between the Marquis of Cornwallis and Tippoo Sultan at Seringapatam.

The petty dissensions and insurrections among the Malabar Rajahs in former times might be traced to its mal-administration. "A house divided against itself must fall." The want of unanimity, among the tribes of India generally, results happily, however, in maintaining British rule.

Brief and imperfect as this sketch of the country necessarily is, in its limited shape, it would be incomplete without a cursory glance at its present peaceful and prosperous state.

In practical form, authentic data, and the latest, may be presented, and perhaps best exhibited in tables, when concise and not elaborate.

The population of Malabar is 17,07,562 as shown in the subjoined return of the Census taken in June 1862.

Hindoos.		Total.	Musselmen.		Total.	Christians.		Total.	Grand Total
Adults.	Children		Adults.	Children		Adults.	Children		
7,70,103	4,73,894	12,43,997	2,57,118	1,80,199	4,39,317	15,678	10,570	26,248	17,07,562

Under late reductions and changes, this District is now subdivided into 10 Talooks only, as above stated.

As in other Districts, a Tahsildar or Sub-magistrate, is the chief Revenue officer in each Talook, among the native functionaries; Adigherries are of the next lower grade.

The Adigherry, with the assistance of two peons, collects the rents, and delivers the revenue obtained from every house or garden in the villages of his range, into the Talook Treasury, and the Talook accounts and collections are transmitted by the Tahsildar to the Huzzoor or General Treasury of the District.

The gross revenue of the District of Malabar in 1861-62 amounted to Rs. 33,74,843, being an increase on the preceding year of Rs. 4,13,207.

The total receipts of the Income-tax (a most unpopular one) amounted to Rs. 1,47,620.

There was an increase under the head of almost every source of revenue in the District.

Prices of raw produce ranged higher than usual.

In rice, paddy, cholum, cumboo, oolundoo, cotton, (trade insignificant), sugar and oil, there was a decrease.

In wheat, gram, raghie, indigo, salt and gingely oil, there was an increase over the preceding year of 1860-61 in the bazaar prices.

There was an increase rather than a reduction of the prices, on the opening of the Madras Railway for traffic from Coast to Coast, in May 1862.

It barely needs to be noticed that the principal marts of trade are at the ports of shipment—Cannanore, Tellicherry, Calicut and Cochin—especially the two latter, besides Palghaut where there are some weathly native merchants and a very fine bazaar.

Cannanore is the chief military station; as a trading

port it ranks last. The force of the garrison consists of one Light Field Battery of Royal Artillery; one of H. M. Regiments of the Line; and two Regiments of Native Infantry.

The European Regiment and the Battery should be relieved every three years to maintain a proper standard of health; a measure that has always been advisable in this country—especially so on the Western Coast, as I am convinced through observation (during my tenure of Medical charge the last six years,) of detachments of H. M. 74th and 66th Regiments.

The development of the coffee estates in Wynaad, has given an impulse to shipments at Tellicherry, as well as to that at other ports, of late years.

Calicut is the principal Civil station of Malabar. Irrespective of its being the first place occupied by the European settlers in India, it is not wanting in historic interest.

Calico, among other useful materials, is said to have been first manufactured here. The remains of old Dutch factories, walls and batteries, may yet be seen.

It is a curious old town, and densely populated; colonized by Mapillahs to the south and by Muckwars on the north—Portuguese town, so called, forming the centre. Better roads are not to be seen in Southern India; there is an abundance of the right material for their construction and a large body of prisoners to work them; beyond the range of convict labour, however, they are soon found to be rutty and disorderly, owing to the heavy rains, and during the Monsoon in July and August are in many instances impassable, except for the heavy country cart which may be made to move along at the rate of a mile an hour.

Near the Huzzoor Cutcherry, which is central, there is a magnificent tank of fresh water; it is about 200 yards square and constructed of granite, by Tippoo. Tippoo's best work in Malabar was the planting saplings along the main roads which now form beautiful shady avenues of trees.

The principal residences are rather more than three miles north of the town, about East and West Hills by the main Coast road leading to Cannanore, and, along the Tambercherry road leading to Wynaad.

"West Hill" (where the late Mr. Conolly who had been 14 years Collector of Malabar, was brutally murdered in September 1855) has been purchased by Government and converted into barracks for the European detachment.

The project is estimated to cost Government not much under a lac of Rupees by the time the Officers' quarters, the Racquet Court, the married men's quarters and other buildings are completed; and the want of water on this Hill is much felt.

Besides the Company of Europeans, there is a Company of Native Infantry and the Police of South Malabar stationed in the town of Calicut. The Courts are a little north of the town.

Near the Cutcherry are the Basle Mission House and Chapel, the Public Bungalow, Native Infantry Lines and Parade Ground, Telegraph Office and Provincial School.

The Jail, in itself, is spacious and answers all its requisites; there is a free circulation of air in and about it, and 11 wells about the premises afford abundance of water.

The three classes of prisoners, viz.: prisoners waiting trial, convicted prisoners, and civil debtors, are separate; female prisoners also occupy separate quarters. The average strength of prisoners latterly was 450. The Jail is about 500 yards from the sea and perhaps 20 feet above sea level; the neighhourhood being closely populated is objectionable. A wretched building is rented as an Out-Jail at Poodiangaddy, a village a little more than 4 miles from Calicut on the Cannanore road, for the reception of about 50 prisoners, who are kept there to obviate overcrowding.

The following table furnishes the number of criminal cases in 1860 and 1861.

CRIMES AND MISDEMEANORS.

Offences against Person—Offences against Property.

	Murder.	Attempt at Murder.	Homicide.	Wounding with intent to kill.	Assault and Wounding.	Rape.	Gang Robbery.	Highway Robbery.	House-breaking.	Theft.	Cattle stealing, killing or wounding.	Arson.	TOTAL.
1860	22	2	4	3	64	10	21	5	392	167	75	21	786
1861	31	1	2	3	66	7	43	7	410	201	101	25	897
Increase.	9	0	0	0	2	0	22	2	18	34	26	4	117
Decrease.	0	1	2	0	0	3	0	0	0	0	0	0	6
												Net Increase...	111

The Jail Hospital built in 1855, on the North Beach, is about a quarter of a mile from the Jail. It may have been economically constructed, but it was not judiciously planned. The same objection might have been raised with regard to the Civil Dispensary built in 1845, until the late improvements effected there.

Under recent rule, and on the fair principle of each community supporting its own institutions, the Civil Dispensary is maintained by voluntary contributions. The subscription of Government is fifty Rupees a month, and the local fund of this charity meets all expenditure supplemental to the monthly Government grant.

A detached building was erected in the same compound a few years ago, at my suggestion, for lunatics under temporary observation and treatment, and another detached building serves for the accommodation of Chermahs (slave caste) obliged to be kept separate from the higher caste inmates.

There is no hospital for the Native detachment—no hospital for the Police, stationed here, and the sick are necessarily admitted into this pauper institution. The objections on this point have been notified, and having received attention, measures will doubtless be adopted to remedy them.

The want of a proper Lunatic Asylum for the people of this Coast has been much felt and has been represented. Such an institution, it appears to me, must, in due course, be established.

I have been fortunate in obtaining the Government sanction for the erection of a Small-pox hospital and a Leper hospital at Calicut—these are finally in course of construction, on an open elevated site, a mile and a half from the town, on the North Beach.

Treating of these institutions, it may justly be remarked that no class of individuals in Southern India stand in greater need of them than the pauper section on the Western Coast, and no people can better afford to establish them than the wealthy influential natives of Malabar, who are lamentably inactive in contributing to their support.

Disease among the poor in Malabar assumes its ugliest features.

Taking epidemics—small-pox is the repeated subject of report of the local Medical officers; it shows itself commonly

in its worst confluent type; its sequelæ are formidable; the exceptions to the general rule,* of its occurring in modified form in individuals bearing marks of successful vaccination, and its recurrence in individuals well pitted by a prior attack, appear more frequent in this humid miasmal atmosphere than we generally see in treating the disease.

That Vaccine Lymph speedily degenerates, that its prophylactic virtues are weakened, and its protective power over the system diminished, has been much noticed of late years among Medical officers serving in damp tropical climates, as in Burmah and the Western Coast. Lymph obtained from the best sources, has been hermetically sealed and preserved in other respects with every possible precaution, and in these countries, found to be inefficient after a brief use.

In the usual peripatetic career of an Assistant Surgeon on the Madras Establishment, it has been my lot to vaccinate during the last ten years, at several stations in Southern India, on the Eastern and Western Coast, and inland, as well as at every station on the Sitang in Burmah, and my observation corresponds with that of others. The same lymph successfully used in Tanjore and in Tinnevelly was soon found inefficient in Travancore and Malabar.

There is little doubt however that we have the remedy at hand, and that the inoculation of a cow in a fit condition with *variolous lymph* from the human subject at a fit stage will furnish us at a definite period, with vaccine lymph, fresh and effective, genuine and protective. The sceptical mind may not be readily disposed to accept the experiments of Ceeley and others on this point, perhaps not admit the established facts (Wilson "Skin Diseases," page 507,) of the transmission by inoculation of the Small-pox to cattle, and the consequent development of Cow-pox in those animals, and of the transmission by inoculation of the Cow-pox to man, and the consequent development of a pustule similar in character to the vaccine pock of the cow.

The test only requires, like all others, to be rightly exercised, the first step of which, the condition of the animal to be inoculated, should be left to the judgment of the Veterinarian—for the second my own experiments lead me to believe that we should take the variolous lymph from the

* Vide Dr. Mackay's remarks on this subject, on a subsequent page.—ED. *M. Q. J.*

human subject at the proper vesicular stage of the disease, or about the fifth day.

Vaccination too often proves unsuccessful in my humble opinion, from the fact of the general transmission of the lymph from the arm of one subject to that of another on the eighth day.

Now it is important to bear in mind that this should be done before the formation of the circumscribed areola. We recognize a vaccine vesicle on its eighth day, to be genuine and not spurious, by its hardened base and its red circumscribed areola, and accordingly proceed to register the case as one of successful vaccination and use the lymph in the next case. This hardened base is effused *plastic lymph*, and is *cup-shaped;* its red margin is the inflamed areola, developed at this stage. The lymph, *sui generis*, in a multilocular vesicle is contained in the cup-shaped, inflamed and hardened base ; the vesicle has been likened to a *pearl* and the base to a *rose*, and the condition of the part on the eighth day, described as *the pearl upon the rose.*

Though this elegant description is barely to be realized in the vaccinated Hindoo juvenile, we have to consider the simple fact that on this eighth day the pearl is undergoing a change by its relation to the rose, *i. e.*, "*that the vaccine lymph is altered in character and become purulent when the areola is established;*" can it then be used with any certainty of success? The *seventh day*, and not the eighth is therefore clearly the better suited for obtaining the genuine vaccine lymph. It is a feasible assumption therefore, that the same principle is applicable in inoculation, during *the vesicular and not the pustular stage of variola;* the distinction of *variolous lymph* and *variolous matter* should be kept in view.

Again, in puncturing a vesicle to obtain lymph for the purpose of vaccination it is no insignificant precaution to reject or wipe away the lymph which first appears from it; the lymph first obtained is often slightly *opalescent;* that clearer, wuich flows more slowly after it will generally be found when placed on glass, if not visibly so to the naked eye.

To carry out vaccination more satisfactorily, a Sub Assistant Surgeon has recently been nominated over the Corps of vaccinators in this District, as Circuit Superintendent of Vaccination, and his operations are supervised by the Zillah Surgeon.

Cholera has prevailed very much in Malabar of late years; the result of the epidemic of 1859 would indicate the character and type of the disease, which, for several months, raged in all parts of the country, except in Wynaad. It commenced that year in the rainy season of July in the Southern Talooks on the banks of the Poonany, and gradually progressed northwards assuming the epidemic feature at Calicut early in October following, when it broke out in the Jail and soon carried off one-fifth of its inmates.

The same medicines issued to Tahsildars for distribution throughout their respective Talooks and the measures adopted, which on prior occasions had proved beneficial, appeared for some days to have little or no effect, when the disease raged widely among all classes.

In the detachment of H. M. 66th Regiment at Calicut two cases only proved fatal, and His Excellency the Commander-in-Chief expressed himself well pleased at the measures adopted to stay the disease by the immediate removal of the sick from the town to hospital tents pitched on an elevated site on the sea beach.

The mortality among such of the natives as were treated in hospital was 66 *per cent.*, that of cases registered throughout the district 93 *per cent.*, during this fearful visitation.

Among the endemic diseases Elephantiasis Græcorum and Elephantiasis Arabum may be prominently noticed.

Leprosy in both the tubercular and anæsthetic forms is seen in every bazaar and public thoroughfare. Like the plague and some other diseases, it may be considered to be happily extinct among European races.

The hereditary transmission of leprosy would appear to be greater than that of any other disease; the doctrine of its contagion in these days is of course wholly exploded.

The tubercular form is the more common and far the more rapidly fatal; the morbid product has not the property of increasing by cell growth.

Elephantiasis Arabum as developed in the lower extremities, may be said to have its local habitation in Cochin—as "Cochin leg" it is more commonly known.

Scrotal Elephantiasis is much more common about Calicut and North Malabar as well as among the Mapillah inhabitants of the Laccadives.

It has been my practice to remove these morbid growths with the knife, when they have attained any size. The operation was undertaken with the utmost reluctance in the one fatal case so treated by me.

This was a strumous subject, aged 50, the apices of whose lungs were studded with tubercles; he was a Mapillah who had come from the Laccadive Islands for the removal, under the '*painless operation*,' of the largest scrotal tumour I have seen; it weighed, on being excised, lbs 78. The case did well for a very few days, when diarrhæa set in, and he died on 9th day after the operation.

Through their uncleanliness and depraved ceremonies, in great measure, are the Mapillahs and Mookwars of this Coast more especially subject to scrotal disease, and an elongated, tortuous, hypertrophied prepuce, for the removal of which they so commonly come to be circumcised. The evidence of a witness in a trial for murder where the plea of insanity was set forth, went to shew the conviction of the witness of the prisoner's insanity, specially, "since the prisoner had of late failed to plug the meatus urinarius after making water, (as was customary among their people) with consecrated mud."

Ophthalmic diseases are found to prevail in an unusual degree among the tribes of fishermen in the Mookwar villages along the coast, through their briny occupation, uncleanliness and exclusive fish diet.

It is barely necessary to observe, that Malabar is, *preëminently* the field for the dermatologist. Every order and variety of skin disease is met with here, and some are distinguished in their aggravated form by bearing the name of the District.

Monarch of his kind as the *Acarus Scabœi Malabaricus* is, he requires the justice of a notice beyond the limits of this cursory view of his country and his quality.

There is perhaps no kind of ulcer so intractable as the *sui generis Malabar Ulcer*. It is in most instances an useless effort to persevere with the changes of local remedial agents, but is best handled as a constitutional affection.

The greatest mortality among the poor in hospital practice on this Coast is found to be under the head of Anasarca—the result of cardiac, hepatic or renal disease, the majority of cases however being structural disease of the heart.

Hypertrophy, being readily recognized, is easily diagnosed in many such, (the horsekeeper's præcordia will afford good auscultatory practice in this disease) but a series of autopsial examinations, will prove the bulk to be "Fatty degeneration of Heart," and the case is beyond curative treatment when arrived at the stage of puffy, doughy, œdematous surface—in a word anasarca, as charitably admitted, for palliative treatment.

Tracing such cases *ab initio*, there appears to me little doubt that this fatty degeneration is a state of disease, induced not after the manner of the anserine *foie gras*, fed sedulously to repletion, to the exclusion of exercise or movement, and of light—but rather diametrically the reverse. Here, in the human heart under morbid disorganization, the adipose deposit in its walls, breaking down its muscular fibrillæ, would appear to be due to an impoverished, *spanæmic condition of the circulating blood*—blood wanting in its due proportion of fibrine, iron, and colouring matter; blood having more of watery particles, and, (on the authority of M. Lecanus' table of composition of human blood. *Ann., Chim. et de Phys.* xlviii. 320) of *crystallizable* and *fluid fat;* blood *defective in its stimulant and its plastic properties.*

This very want of plastic matter, Nature's reparative agent in wounds and operations, and which in the European is superabundant, materially diminishes the chance of a fatal result in the Asiatic.

Before leaving the subject I am tempted to cite one recent case of anasarca which was presented for treatment. My patient in this instance was a Tier in high life, very wealthy, and, as I judged, might have ridden about 16 stone, if mounted.

With a handsome fee for my professional visit I was courteously and with no little ceremony conducted into his scrupulously clean house by numerous relations and attendants, bearing limes, flowers, cocoa-nuts, umbrellas, and a chair; a stern looking individual guarded the sick chamber, who salaamed me and dismissed all followers.

A curtain was drawn, the chair shouldered, and the Hakim, as I found him to be, preceded me—with an intelligent recognition of my words in a salaam. Ushered and seated by my case, diagnosed at a glance, my mind was studious as to

the practicability of photographing what was before me. "This poor old man was to undergo the *curative* treatment of his Hakim; in a perfect state of nudity, with a charmed string round his waist, he was lying in a filthily dirty wooden trough, with a plantain leaf under his head, deluged from head to foot with oil; here had he been without moving, nine whole days and nights, and here was he to remain five more, till the next change of the moon." The dying patient, with organic disease of heart, as my stethescope told me, was a benevolent, intelligent old man, despite his blind faith; the Hakim was an astute, intelligent old knave, a Paniker, (Astrologer) who soberly asserted his faith in the cure about to be wrought by his wisdom at the price of a slice of land and cocoa-nut trees, paid in advance according to the general custom of his country. A more revolting picture of intelligence, ignorance and superstition, could scarcely be photographed. The curative result was a case of positive and negative as I mused, in our opposite views of it; but the salient features would not come out clearly in the picture, even in the hands of an artist in oils. It would be beyond the limits of this sketch of Malabar to add more here.

Cochin requires the notice due to that important and flourishing Port of trade, and this it has in great measure received from its residents and others.

Wynaad is little known, beyond the thriving Coffee estates about Vythery and Manantoddy; a very large portion of that beautiful country remains unexplored. There is, on the authority of an inhabitant of that region, more virgin soil about the neighbouring estates of Vythery, fit for coffee cultivation, than about those of Manantoddy, where the soil is much exhausted. Good roads are wanting about Wynaad, and this first step in civilizing a country is a grievance sufficiently made known to the public by its local correspondents.

ART. III.—*A scheme for establishing a uniform system of European Medical Practice among the Natives throughout the Madras Presidency, and for the more effectual improvement of the Sanitary condition of the people.* By W. VENKATASWAMY NAIDOO, Medical Subordinate, Madras Establishment.*

[*Communicated by the Principal Inspector General Medical Department.*]

HAVING received a course of education in the Medical College, Madras, and being fully convinced of the superiority of English Pharmacy over that of the Natives, both by constant observation and practice for the last 20 years I have been in the Medical Department, I consider the following plans, if approved by the higher authorities, would not only prove highly beneficial to the poor, ignorant and superstitious natives who are, it is truly lamentable to observe, daily falling victims to the empirical practice and treatment of the native practitioners, but would also lead to improve the general health.

Though it cannot be denied that the number of Hindus who resort to the Civil Dispensaries for relief is daily increasing, yet it is an undeniable fact that there are thousands of village people who, through ignorance and superstition or perhaps from extreme poverty, cannot avail themselves of the benefits of the sanitary institutions established by Government in each Zillah. The village people are certainly in want of proper aid, both Medical and Surgical—for when they become ill, they apply to some native quack who styles himself a doctor and earns his livelihood by administering either black (opium) or white (mercury) medicine, in enormous doses, which are well known to the quacks and old women in every house and in every village. These drugs sometimes effect a cure or immediate relief of the suffering, but the ultimate results are dreadful and, in many instances, fatal, by producing profuse salivation, extensive ulceration or sloughing of the mouth, necrosis or death of the jaw bones, stupor, extreme nervous exhaustion, &c. When these practitioners see their patients in such distress they (practitioners) abscond, leaving the sick to recover or die, as the case may turn out.

* We publish this paper as an interesting exposition of the views of an educated Native, who advocates the introduction of an European system of Medicine to be enforceed on a plan essentially original in its character and with extended Native agency. We reprint the Article without correction of idiom,—or comment on its practicability.—ED. *M. Q. J.*

They also employ different deleterious herbs, from ignorance, as medicines, which instead of effecting cures, affect different organs, such as of sight, hearing, smell, touch, &c., giving rise to dimness, loss of vision, partial or total deafness, bleeding or fœtid discharge, numbness or loss of sensation in limbs, or paralysis. When such ill effects result from their most mischievous mode of treatment, they satisfy the patients by saying that the best and most valuable medicines had been tried but to no purpose, that no medicine can cure diseases if the planets of the sick person are on the wane, and that as soon as they attain an ascendancy, any simple remedy will afford ample relief. Believing this to be true, the poor and ignorant invalids endure their pains, enquiring of their priests for the long looked for auspicious time. I have seen very many cases of this description during my travels on service, and when I persuaded them to go and seek medical aid at the Civil hospitals, they expressed their total inability of doing so from want of funds for travelling and from other domestic inconveniences. The following instance will show clearly the real nature of their circumstances. When I proceeded to Badrachellum in Medical charge of tank diggers in January 1862, I met a shepherd, 18 years old, standing under a tree close to the place I put up in the village, called Ootasamudrum, and found him suffering from hard breath. On enquiry he shewed his nose, in which I detected a large fibro-cellular polypus blocking up the left nasal cavity and pressing against the septum, and asked him to bring his parents to me as he could not give a good account of his case himself. He immediately went and returned with his aged parents, whose narrative of the case was as follows. The lad had, it appears, a slight hæmorrhage from the nostril at first, and a native practitioner having applied the juice of some leaf, the bleeding stopped, and an immoderate discharge of mucus was the result. After the lapse of one year, the polypus began to grow and increased gradually in size within the last four years, emitting a bad smell. They being poor and having to cultivate the cholum fields every year for their support and to watch their cattle constantly, could not leave the village for any other place to seek proper aid. Consequently they had no other alternative than to remain in total despair of the life of their only son. Having learnt the history of the case and gained their consent to remove the polypus, I felt the neck of the tumor and twisted it off in the usual manner: there being not much bleeding I syringed the part with alum

lotion and gave them some for further use, with directions. While the out villagers suffer so much from want of proper medical aid, many of the labouring classes of towns do not avail themselves of the benefits placed within their reach in proper time on account of their very poor circumstances—for instance, when a labourer gets fever, he continues to go to his daily work for fear of losing his wages and starving his wife and children, which he would if he attends the Civil Hospital for medicine; and as soon as he feels himself quite unequal to his work and unable to walk, he thinks of resorting to the hospital for aid; but then he is unable to pay for bearers to convey him thither, his wife then tries to support him and her children by selling the few articles she may have in the house, having recourse in the mean time to some native drugs. In this way some recover I believe by the *vis medicatrix naturæ*, and many die in their own houses, or after they have been brought to the hospital, from vital exhaustion caused by the powerful drugs administered by the ignorant empirics. Such being the present state of sufferings of the poor and ignorant, it is my humble opinion highly desirable to place the medical comforts within the reach of every person. To effect the same, the adoption of the following measures will, in my humble belief, be best suited.

Firstly.—A few medical works, such as Anatomy, Physiology, Surgery, Pharmaceutical Chemistry, Therapeutics and Medicine, should be translated into Telegu, Tamil and Hindustanee, in an abridged form, for the instruction of the native practitioners; as a knowledge of the nature of the disease, of the constitution of the sufferer, and of the virtues of the remedies and their mode of action are the essential preliminaries to judicious treatment. I have already commenced to translate Erasmus Wilson's Anatomy into Telegu, and finished the Osteology by discovering names for many bones in different native medical works, placed at my disposal by a friend of mine, and by inventing Sanscrit names for others by the assistance of Pasumarti Umamabeswara Sastri, a Pundit in Rev. Mr. Noble's School.

Secondly.—A corps of licenced native doctors should be raised, selections being made, for the present, from the number of men now practicing native medicine in each town or village, and be formed into 1st, 2nd and 3rd classes. Certain number of boys in each Zillah School who are desirous of learning the profession should be formed into a Medical class

and trained up well for filling the vacant appointments. These men should attend the Civil Dispensaries for 18 or 24 months to study and learn the Hospital practice, such as bandaging, bleeding, vaccination, dressing blisters and sores, applying leeches, administering injections, opening abscesses and buboes, extracting teeth, in addition to improving their knowledge both in Native and European medicine.

Thirdly.—A competent Medical Subordinate who could undertake the task of translating the required medical works into one of the abovementioned vernacular languages, should be appointed as Superintendent to each division in order to visit each District in it, to collect information from the different native practitioners, to select the best prescriptions or medicines which have proved most successful in the treatment of diseases of common occurrence in the District, to translate the same, together with the mode of preparation, administration, &c., into English, and to submit the whole to the Medical authorities at Madras, who, on being furnished with all the information from each division, should consider fully into the nature, composition, and virtue of the various preparations of drugs employed by the natives, and have a book prepared of such articles as will merit their approbation, under the designation of Native Pharmacopia for general adoption both by the European and Native doctors in the treatment of natives alone. By this means the expenditure of many of the European medicines will be cut short with a proportionate saving to Government; the drugs can easily be procured at any time, and the mode of treatment pursuable both after the European and the Native manner will be much appreciated by the Hindoos, and their prejudices will soon be removed: it will also lead to many new discoveries in medicine. The superintendent should also visit all the districts in the division once a year, and examine the licenced practitioners in the vernacular language of the district in the presence of the Civil Surgeon in each Zillah, and submit a report on the attainments and progress in their profession, &c. He should, under the supervision of the Civil Surgeon, prepare such approved native medicines as can be stored by, and supplied annually to, the Village doctors, as there are many native preparations possessing properties similar to those of Dover's Powder, Compound Antimonial Powder, Compound Scilla Pill, Compound Iron Pill, Plummer's Pill, &c. He should have charge of them, furnishing an account of the same annually through the Civil Surgeon.

Fourthly.—Each native doctor should pass an examination in all the subjects taught to him, as well as in Native practice of medicine before a Committee of Medical Officers, and be appointed to each pettah or chief village in communication with the Collector and Magistrate of the district. They should afford medical aid to all who seek it and vaccinate all the children within the limits of the place to which they are posted, and attend to the sanitary condition of the place. If they meet with any serious cases, both surgical and medical, they should persuade the sufferers and forward them to the nearest Civil Dispensary.

They should also revaccinate the young and old ones in every five or seven years, which mode of doing would, I believe, tend to prevent the invasion of small-pox in a most severe or confluent form, when an epidemic of this dreadful disease prevails or the system becomes fully susceptible of its influence. I witnessed the death of several people (adults), who had been vaccinated in their infancy, by confluent small-pox in the District of Ganjam. As the native practitioners generally evince a great aversion or disinclination to dress sores or treat surgical cases, those that are willing and qualified to perform both duties should be promoted to 2nd or 1st class, and the pay of each class should be fixed as shewn in the table appended.

They should also furnish the superintendent with monthly returns of the sick treated, in their own language for publication in Local Gazette. No other person or persons than licenced men should be allowed to practice medicine or receive fees as the object in establishing licenced practitioners, is to use medicines with care, to treat diseases with sound judgment, and to render the present mode of treatment to be of a rational character, and thereby to save lives from being sacrificed to empiricism.

It is also not easy for every person who learns the names and uses of a few drugs to cure diseases; and he who professes medicine should possess such abilities as to supply himself with an extensive and precise information on all the subjects which can conduce to a knowledge of the human body on the one hand, and of the virtues of different remedies on the other to effect a single cure; therefore no quackery should be tolerated under any circumstances. If no law can be enacted to prevent quackery, time itself will, I dare say, put a stop to it if we adopt the above plan.

Fifthly.—Funds should be raised to defray all the ex-

pences that may be incurred for the support of a large establishment, and for the purchase of different native remedies, &c., on a large scale. This can be fulfilled to a great extent without any difficulty by adopting the following courses—viz., the Native doctor should charge for the medicines issued to their patients, and remit the sum thus collected monthly to the Civil Surgeon. The rates of charge for medicines should be fixed according to the existing circumstances of the people, exempting the very poor from all charges. The higher class or individuals paying Income-tax should be formed into three divisions, and the lower class into two divisions, as shewn in the subjoined table.

Table showing the rates of charge for Medicine.

Attendance for gratis.

Description of people.	Divisions.		Rate of charge for each dose of Medicine.			Remarks.
Higher class or those paying Income Tax.	1st Div.	Adults.	0	4	0	Includes the very rich Zemindars, Nabobs, &c.
		Children.	0	2	0	
	2nd „	Adults.	0	2	0	These divisions include Merchants, Ryots and Public Servants receiving pay above 20 Rupees.
		Children.	0	1	0	
	3rd „	Adults.	0	1	0	This division includes Goldsmiths, Carpenters, Painters, &c.
		Children.	0	0	6	
Lower class or those who come under the head of Licence Tax.	1st „	Adults.	0	0	6	
		Children.	0	0	3	
	2nd „	Adults.	0	0	0	This division includes very poor. Should receive both medicine and attendance gratis, and be allowed batta for three days while under treatment, and sent to Dispensaries if long treatment is required.
		Children.	0	0	0	

By having such an arrangement as the above, the higher classes will pay the charges for medicine, &c., very willingly and gladly, for they will not only have their accustomed doctors as heretofore, but also be treated with more care,

attention and success, and the actual cost for medicine and for paying the establishment will doubtless be defrayed by the sale of the medicines alone, though not fully at the beginning.

The pay of the whole vaccine establishment will be a saving to Government hereafter with results of highest satisfaction, as each native doctor will have only a limited number of population to doctor, vaccinate and re-vaccinate with care and attention and to furnish *true* returns. If any licenced native doctor does not wish to receive a fixed salary in order to employ himself as a free practitioner, he should have liberty to do so, but he should pay a fee of 50 Rupees for the licence he obtains and be subjected to annual examination in common with others. If the native doctor of one place or village is called upon to attend a patient residing in another place or village, he should not refuse do so, but he should be at liberty to charge for his trouble.

I beg to be pardoned if I am wrong in stating that if the ruling authorities take into their full consideration what the term "licence" is and ought to be in its widest sense, it will manifestly show in my view that it is not granting more permission to every individual to carry on his trade, or profession as he likes in an ignorant way to the detriment of the public health, but to do it with all the knowledge requisite regarding the nature and best fulfillment of his trade, work, or profession, and of the responsibility which is attached to him if he does not proceed cautiously to prevent bad or injurious results which may ensue through carelessness, neglect, and inattention on his part.

Now, persons who had been nominated to pay the licence tax before its abolition are almost all ignorant of the above circumstances; for instance, the washerman does not know, in the first place, how to bleach properly, he uses some indigo and spoils clothes; secondly, he does not take notice of the state of water in which he washes the clothes; thirdly, he does not know what is contagion or to what results his lending clothes of syphilitic persons to healthy subjects would give rise, and what would be his crime when he does so.

The vegetable or fruit seller is utterly ignorant of the nature of his trade—he does not take notice whether the articles are fresh, tender, or properly ripened, or rotten, or decomposed; but he knows to increase or decrease the price according to their scarcity or abundancy in the place, nor does he consider the unwholesome effects which they produce when taken in a tough, rotten or decayed state.

So, the butcher sells meat of diseased sheep or cattle, for most of the ignorant people suffer under the vague idea that the stomach should be filled somehow or other to appease hunger without reference to the good or bad effets of the articles taken.

The barber also propagates contagious diseases by shaving the heads of healthy persons with the same razor which was used for subjects suffering from skin diseases of scalp; the milk man, the butter or ghee seller, and the oilmonger adulterate very frequently their articles with noxious substances through ignorance and avarice, and cause many to suffer from their ill effects.

The carpenter cuts or buys any bitter or acrid wood he comes across without considering its good or bad qualities, and sells wooden spoons, cups, &c., made of it; when these are brought in contact with hot rice or acid curries, their extractive principles are either absorbed or dissolved, and the ill effect produced on the alimentary canal would be nausea, vomiting, burning sensations, griping, purging, &c.

The goldsmith, though he has to meddle every day with different metals, such as gold, silver, mercury, copper, lead, &c. in preparing jewels, yet he is not acquainted with the most serious results which some of these metals will produce on the human frame when inhaled in form of fumes or absorbed through skin; he neither knows the melting point of the metals he daily melts, nor has he any knowledge of the prophylaxis; consequently, he raises the heat to much higher degree than it is actually necessary for the metal, and causes very thick fumes to rise at once, which entering the air passages of himself and of other workmen who sit near him, will prove of course very unwholesome. The poor people get leaden rings or bangles made by these ignorant workmen, wear them, and suffer the consequences.

I traced the cause of lead palsy in two cases among the Bunjare caste to the wearing of lead jewels; when I had to treat them while I was at Chutterpore. Many of the arrack and toddy sellers mix narcotic drugs, such as stramonium, soap-nuts, &c., with arrack and toddy to increase the power of these articles and thereby to effect a ready sale; for, persons addicted to the use of liquors, generally prefer the shops in which they can get strong drink, but both the vendors and drinkers are utterly ignorant of the ultimate bad results which the use of the adulterated articles may produce upon the human system.

Though the Abkarry renters are licenced men, yet they do not know in the first place the proper process by which the arrack, they daily distil, is prepared; secondly, they are ignorant of the constituents of what remains behind after distillation of the spirit: consequently they add rotten plantains and milk-hedge stalks to the residue which consists of disagreeably smelling liquid called fusil oil, water and vinegar, and repeat the distillation to increase the strength of the spirit; thirdly, as they are not acquainted with the process of purification, the spirit contains fusil oil, gluten, &c., and becomes sour in a very short period with or without exposure to the air.

Such being the system of brewage in India, many of the head affections, nervous and bilious complaints may be ascribed to the effects of the pernicious drugs employed by these ignorant vendors. It is well and good to announce that the renters would be liable to a heavy fine if they are found to commit such crime as the above; but it is impossible to detect the same by any than a professional person. So every article should have the supervision of the Sanitary Medical Officer or of his assistants before its sale to the public to preserve general health. A confectioner or sweetmeat seller not long ago sold sweetmeat balls prepared with some narcotic substance, it appears, to a certain fraudulent person who, having found an access to a dancing girl, (who lately arrived at Masulipatam from Hyderabad with some jewels, money, &c.,) as a pretended lover, and presented her the sweetmeat balls, when she ate one of them, she became stupified in a short time and began to roll on the ground; while she was under stupefaction, which lasted from 8 P. M. to 6 A. M., the pretended gallant robbed her of every thing and went away. Had that woman eaten another ball, she would have doubtless been a corpse. So every tradesman is doing some mischief or other through utter ignorance of the real qualities of the substance he uses.

Under these circumstances, the sanitary condition of the natives can never attain the height of its perfection unless the authorities draw their kind and full attention to such minute but most important points as those pointed out above and adopt proper measures for the prevention of all such occurrences. The new Police system and the rules of the Penal Code appear to be such as to prevent the existing evils to some extent by punishment alone, but not

by imparting the required useful knowledge to people; for, the policemen themselves do not know what influence the wearing of a leaden ring and drinking of the water kept in leaden vessels, would exercise on the human economy; therefore, all the persons who come under the head of Licence tax should obtain certificates of licence from the Civil Surgeon by paying a fixed fee, and be made acquainted in their own language with all the principles and particulars of their trade, work, or profession through the assistance of a native medical subordinate who could instil into their minds all the information regarding public hygiene, and they should also be warned as to their liability to punishment in case of deviation from the rules mentioned in their licence certificates. By adopting these means the sanitary condition of the people in general will doubtless be very much improved; and the funds also can easily be raised.

There is another means of raising funds if the authorities deem it just and proper to adopt, namely, by devising plans for the prevention or annihilation of the venereal disease—a disease highly virulent in its nature, specific and contageous in its character, variable in its form, formidable in its results, and inveterate in its cure, and which was, is, and will be the bar, I believe to some extent, to all the means tried, trying, and to be tried for the improvement of the public hygiene for the following reasons. When a native is attacked with this complaint he applies to some native empiric, and gets his suffering much aggravated by an injudicious mode of treatment and becomes very much debilitated before a cure, perfect or imperfect, is effected, and continues ever after in a more or less feeble state of health, either by the bad effects of the native drugs taken or by the disease itself in a secondary or tertiary form, or by frequent relapses of the same disease, more frequently the wife and children also are infected with constitutional syphilis, thus, all the members of the family become sufferers of one and the same affection. The results of this disease are dreadful and numerous, viz., ulcers on the skin, tongue, and lips, warts, ulceration of the fauces, tonsils, larynx and pharynx, loss of the eyebrows and eyelashes, exfoliation or death of the palate and nasal bones, nodes, enlargement of the testicles, ulceration about the roots of the nails, loss of sight, lepra and many other cutaneous disorders which are well known to the medical world, produced in different persons in different forms, debilitating the constitution and rendering the system readily susceptible of the causes of various other diseases, for, many

dyspeptic, anæmic, rheumatic, asthmatic, anasarcous, paralytic, beriberial and uterine complaints daily treated at the Civil Dispensaries may be said to owe their origin to the exhausting effects of this malady; and half of the people in each town appear to have been thus predisposed, so that this condition is allowed to remain unchanged it will continue to militate against health and to wear out the human race which, I believe, is not increasing as it ought to be, or else the extensive and rich forests now occupied by the wild animals would have already been inhabited and the lands cultivated by people with results of great advantage both to the country and Government.

The best possible means against the propagation of this world-wide malady are, firstly, to attach a large venereal ward to each Civil dispensary and to have every prostitute or dancing girl examined every week by a matron or by a respectable medical subordinate and treated by the Civil Surgeon, if required—a practice already carried on in all the stations in which European troops are located. Secondly, all prostitutes or dancing girls should be apart from the houses of the respectable people and their names should be registered, syphilization should also be tried on these persons. When men or women of the respectable class suffer from syphilis, the charge for medicine should be double; thirdly, all persons whether in Military or Civil service should pay some fine for the number of days they remain under treatment for venereal complaint, and also for itch when it originates from want of personal cleanliness, since the practice of daily ablution of the whole body is observed by a comparatively small number of persons, and even the Brahmins and other higher classes are not over clean, and it is one which ought to be insisted upon as tending to guard against the causes of various diseases by keeping the skin perfectly clean for the performance of its function. A separate nominal register should be kept with an index for entering the names of all the venereal patients in full as a guide for the medical officer at the time of granting certificates of unfitness for further service, as this practice has not hitherto been observed; and it is of utmost importance in a financial point of view.

The funds which can be raised easily by the several modes mentioned above, will, I hope, meet the demands for the object in view, and be the means of relieving the present state of suffering of the poor under the Divine blessing.

Table shewing the probable cost per month and the amount derivable by the sale of Medicine per mensem.

Number of population in the Kistna District.	Monthly Cost.				The Average daily number of sick and the amount derivable per mensem.					
1,134,000.	Number of Native Doctors required at the rate of one for each 2,000 people.	Number of each Grade or Class.	Pay of each Native Doctor of each Grade per mensem.	Total Amount per mensem.	Number of population.	Probable average daily number of sick at the rate of 20 per each thousand.	Number of the sick may be taken as poor requiring medicine gratis.	Number of the sick able to pay for their medicines.	Number of each class and the rate of charge.	Probable number of adults and children of each class.	Amount of charge for two doses of medicine per day.	Total amount per mensem.
	567	As there are forty chief villages in the Kistna Dist., one 1st Class should be placed in each chief village, and otherwise its neighbouring villages according to the number of population.			1,134,000	2,2680	17,010 or three-fourths of the average sick.	5,670 or one-fourth of the average sick of which two classes may be formed, viz., 1st and 2nd.	1st Class. 2,835 or half of the one fourth number of the daily average sick—charge one anna for each adult and half anna for each child for each dose of medicine.	945 or one-third of the 1st Class. } Adults at one anna per dose.	rs. A. P. 118 2 0	rs. A. P. 3,543 12 0
										1,890 or two-thirds of the 1st Class. } Children at ½ anna per dose.		
		40-1st Class	rs. A. P. 20 0 0	rs. A. P. 800 0 0					2nd Class. 2,835 or half of the one-fourth number of the average daily sick—charge half anna for each adult and ¼ anna for each child for each dose of medicine.	945 or one-third of the 2nd Class. } Adults at ½ anna per dose.	59 1 0	1,771 14 0
		40-2nd „	15 0 0	600 0 0								
		487-3rd „	12 0 0	5,844 0 0						1,890 or two-thirds of the 2nd Class. } Children at ¼ anna per dose.	59 1 0	1,771 14 0
				7,244 0 0								10,631 4 0

It will appear from the above table that though the calculations are made on a lower scale, taking only one-fourth of the sick as such as able to pay for their medicines, yet the amount that may be collected monthly exceeds the amount required for the Native Doctors, leaving a sum of 3,387 Rs. 4 annas above, which amount will I dare say cover the expenses for buying, preparing both the European and Native medicines, and also for paying extra allowances to the Civil Surgeon and the subordinates for their additional labour.

This system might be carried fully into operation in the Northern Division, beginning the experiment in the Kistna District, as there are many native practitioners desirous of acquiring knowledge in European medicine.

Art. IV.—*Further Notes upon the Snakes of the Madras Presidency ; with Descriptions of new Species.* By Capt. R. H. Beddome, Officiating Conservator of Forests.*

(With Illustrations.)

(In continuation of Art. I., Vol. V.)

Rhabdosoma Microcephalum.

I have lately procured this snake at Ootacamund and at Nediwattam on the Neilgherries, it is generally of a very reddish brown color. Some specimens are streaked the whole length and have not the irregular dark spots on the anterior portion of the trunk. It seems very common on the Neilgherries.

Oligodon Subgriseus.

I procured this a short time since in the town of Salem.

Rostral produced; back frontals two pair, small, anterior bent over and touching the two nasals, posterior bent over and touching the very small loreal ; one ante, two post, oculars; vertical large, five sided, pointed behind ; superciliars small; occipitals large ; two temporals on each side ; upper labials seven, 3rd and 4th enter the orbit ; scales in 15 rows ; color of body of a light earthy brown with irregular arrow-shaped black markings ; head with the prominent black marking peculiar to Oligodon and Simotes.

* Having lately collected largely in the Wynaud, on the Western slopes of the Neilgherries, on the Shevaroy and Denkinicottah Hills, I am enabled to add several new species to my catalogue published in a former number of this journal. I intend sending typical specimens to the British Museum and hope to have coloured plates of the new species published in England.

Oligodon Affinis.

I have procured this snake lately in the Wynaud (on Mr. Minchin's estate).

Oligodon Brevicauda.

I have procured a very large specimen of this handsome snake at Walaghat on the western slopes of the Neilgherries; it differs considerably in coloration from the one described by Dr. Günther, which had probably much faded—its body and belly are of a bright reddish hue, there are two broad (double) streaks on the upper portion of the trunk extending from the neck to the tail, and a similar but narrower lateral streak on each side, there are quadrangular black spots on the belly. Fig. No. 1.

Simotes Binotatus.

This snake is rather common about Ootacamund.

Ablates Collaris.

I procured a young specimen of this snake in the Mudumallay Forests (foot of the Neilgherries); the upper portion of the trunk is of a bright brick red.

Ablates Olivaceus. (R. H. B.)

Head hardly distinct from the neck; body rounded with rather flat belly; rostral reaching the upper surface of the head and pointed behind, broad and extending to below the nasals; five upper labials, the 3rd occupies the lower surface of the orbit, the 5th very large; nostril in one nasal; loreal five sided; two ante and two post oculars; anterior frontal small, five sided; vertical, pointed behind, six sided; superciliars, very small; occipitals very large; eye small, pupil round. Scales in 17 rows, not imbricate, smooth, rhombic; teeth all equal; body and belly of a uniform dull olive green, four longitudinal rows of elongated black spots; abdominals 217, anal bifid; subcaudals 72, all bifid.

I procured this new species lately at Manantoddy.

Cynophis Malabaricus.

I have procured this lately on the western slopes of the Neilgherries, in the Wynaud, on the Shevaroys, and on the Denkinicottah hills; it seems very common.

Twenty-three rows of scales, scales not much imbricate; vertebral row not larger; teeth equal, pterygo-palatine bent inwards; head not distinct from trunk, rather pointed in front; head shields regular, rostral reaching the surface of the head and rounded behind; one very large ante-ocular;

two small post oculars; one loreal; nostril between two nasals; groove of mouth deep; nine upper labials, 4th, 5th and 6th enter the orbit; eye large, pupil round; earthy brown, the anterior portion of body with transverse black bands with generally five large white marks in each band; black markings continued down on to the abdominal scuta and then divaricating to each side and generally joining the adjoining bands; posterior portion of trunk with two lateral streaks; belly whitish; two small black lines from the eye downwards through the labials; 237 abdominals, anal entire; 81 double subcaudals.

COLUBRIDÆ.

Spilotes. (Wagler) Gen. Char.

Body and tail much elongate and compressed; head with rounded muzzle and moderate rostral shield; one loreal, one anterior, two or three posterior oculars. *Scales keeled. Teeth equal,* smooth.

Spilotes Vittatus. (R. H. B.)

Head distinct from trunk, crown flattened, rostral small, not reaching the surface of the head; two pair frontals, small, of equal size, vertical pointed behind; nostril lateral between two nasals; one small loreal; one ante, three (rarely only two) post oculars; three temporals; eight upper labials, 4th & 5th enter the orbit; eye large, pupil suborbicular; scales in 17 rows; neck with a bronze or white colored collar; the frontals and occipitals are mottled with bronze color in young specimens; body bluish black with two longitudinal rows of small narrow transverse orange or white colored bands extending from neck to tip of tail; belly uniform whitish or orange coloured, sides of belly sometimes slightly mottled; anal entire.

I have procured specimens of this very pretty little new species at Nellumbeir, Mudumallay Forests and Walaghat.

FAMILY DRYADIDÆ.

Body generally elongate, not much compressed; tail proportionally elongate, slender, not distinct from trunk, tapering; head moderate, or with elongate muzzle, distinct from neck; shields of head regular; posterior frontals truncated behind; loreal sometimes wanting; generally one anterior and two posterior oculars; scales elongate, lanceolate; subcaudals 2 rowed; eye rather large, pupil round.

No longer tooth in front, or in the middle of the maxillary bone.

Cyclophis.

Body rounded; habit slender; head ovoid, distinct from neck; shields of crown regular; one anterior, two posterior oculars; one loreal or wanting, one nasal pierced by the nostril. Scales subelliptic, rather large, smooth, in 15 or 17 rows (rarely keeled); eye rather large, pupil round; all the teeth equal, smooth.

Cyclophis Calamaria. (Günther Mus. Cat. Appendix, p. 250).

Loreal none, united with the single nasal shield; seven upper labials; greyish brown front part of the back, on each side with a series of obsolete blackish spots, confluent behind and forming a very narrow undulated line.

Habit moderately slender; head elongate, ovoid with rounded crown and with moderate rather conical muzzle; rostral shield rather large, reaching to the surface of the head, rounded behind; anterior frontals much smaller than posterior ones, the latter forming a part of the side of head, but separated from the labials by the nasal shield; vertical more than twice as long as broad, with rather convergent lateral edges and an acute angle behind; occipitals moderate, rounded behind; nasal single, very large, pierced by the nostril in direct contact with the single anterior occular; two posterior oculars in contact with a large temporal shield, two smaller ones behind; seven upper labials, 3rd and 4th form the lower edge of orbit. The first pair of lower labials forms a suture behind the terminal one; scales rhombic, 15 rows, smooth, ventral plates hardly raised on the sides, anal bifid.

I procured this species (described by Doctor Günther from a specimen from Ceylon) on the Shevaroy Hills.

FAMILY PSAMMOPHIDÆ.

Body and tail elongate, or stout, rounded; head short or narrow, with a deep grove before the eye, moderate with round or elliptic pupil; shields of head regular, posterior frontal rounded or angular behind; vertical narrow; superciliary prominent; loreal never wanting; one ante, two post oculars. Scales never keeled, in 15 to 19 rows; subcaudals two rowed; *posterior maxillary teeth grooved, generally 4th or 5th longer than the others.*

PSAMMOPHIS, (Boie) Gen. Char.

Body and tale elongate; head with flat, on the sides rounded, crown; loreal region grooved; snout pointed in front, rather elongate; posterior frontals behind produced in an obtuse angle; vertical shield long, narrow; one elongate loreal; one or two nasals; one ante, two post, oculars; scales elongate, smooth, in 15 to 19 rows; pupil round; posterior maxillary tooth channelled, long, 4th or 5th maxillary tooth longer than the others (in one species equal), anterior teeth of the lower jaw longer than the hinder ones.

PSAMMOPHIS INDICUS (R. H. B.)

The 4th and posterior teeth longer than the others; colour of a greyish hue with a longitudinal black line on each side of the belly (edge of the scuta); three broad dark brown longitudinal streaks from neck to tail; belly white; scales scarcely imbricate, 17 rows, anal bifid, vertebral row not larger; rostral moderate; frontals two pair, anterior much the smallest, posterior produced into an obtuse angle behind; vertical elongate, pointed behind; nostril in a single shield, loreal long, one large ante, two post, oculars; eight upper labials, 4th and 5th enter the orbit; eye large, pupil round; ventral plates slightly rising on the sides.

Procured on the Nullay Mullay Hills (Kurnool District).

ELAPSIDÆ.

CALLOPHIS CONCINNUS (R. H. B.)

Body shining, bluish black, some whitish markings about the labials and throat; belly brilliant red colour; rostral reaching the surface of the head and pointed between the anterior frontals; upper labials seven, the 4th and 5th very high, the 3rd and 4th enter the orbit, the 5th touches the lower post-ocular; both pair of frontals small, but posterior ones more than twice the size of anterior; vertical small, pointed behind; superciliars small; nostril large between two nasals; no loreal; one ante, two post, oculars; occipitals large, pointed behind, on the side of each is a very large pair of temporals; vertebral line of scales not larger; all scales smooth in 13 rows, abdominals 241; subcaudals two rowed, 42 pair; anal bifid. Total length 45 inches, of which the tail is 4½ inches long. Fig. No. 2.

This very fine snake I procured at Nediwuttum on the Neilgherries. I have also found it at Walaghat, half way down the Western slopes of Neilgherries.

UROPELTIDÆ.

Silybura Shorttii (R. H. B.)

Colour blackish with large dull yellowish white mottlings, colours nearly equally divided; tail beneath black, with a yellowish band on each side; head plates as in S. brevis, *but vertical, 6 sided, and occipitals pointed behind.* Caudal disk very large and well defined; *scales very strongly 2-3 keeled,* terminal scale large; slightly keeled, 2 forked. Scales of body in 17 rows; on the neck 19. *Eye very large.* Total length of specimen 9 inches. Forwarded to me by Dr. Shortt, from the Shevaroys. Fig. No. 3.

Silybura Ocellata. (R. H. B.)

Colour, of the body of male yellowish, becoming gradually brown near the head and tail; of the body of the female dull brownish; of the young dark purplish brown, all banded with rows of 4 or 5 black-edged white or yellow spots (like eyes), generally rather irregularly placed. Sides of belly with transverse, very irregular shaped, yellow or white blotches, rarely meeting over the abdominals and forming a transverse band; nostril pointed and produced forwards; nasal scutellæ meeting behind the rostral and separating it from the frontals; *eye very small,* obscure, in front of shield; other shields and labials as in the genus; scales round the neck 18 rows, round the trunk 17. Caudal disk not very clearly defined; *scales 2-5 keeled;* terminal shield entire or slightly 2-3 pointed; abdominals 199. Subcaudals 8 or 10 pair, some generally entire. Total length 14½ inches.

I procured this fine new species at Walaghat on the Western slopes of the Neilgherries in the dense forests at an elevation of 3,500 feet. Fig. No. 4.

Silybura Beddomii.

Abundant on the Shevaroys.

Silybura Brevis (Günther).

I have a full grown specimen of this species, which I procured in the Mudumallay Forests at the same elevation as the one described by Dr. Günther; it is 11 inches long and the trunk 15 lines in circumference, otherwise it agrees in every way with Dr. Günther's description except that a few of the scales of the tail are three keeled.

The following is a description of a very young specimen of a Silybura found on the Neilgherries at 5,500 feet elevation.

I at first took it to be new as the terminal scale is entire, and it was procured at a much higher elevation and has only 16 rows of scales round the body. I now however expect that it is only a very young individual of Silybura brevis, without intermediate forms, however it is sometimes difficult to identify the young (of this family) with the adult.

Silybura Brevis?

Back bluish-black, belly white with bluish black mottlings; sides of throat and upper labials white, lower part of tail black with a broad white band all round the black mark. Snout obtuse; rostral large, produced back; nostril in single nasal shields which meet behind the rostral and separate it from the frontals; frontals one pair bent over and occupying the place of a loreal and ante ocular and joining the second and third labial; one large posterior ocular coming above the eye, and there in contact with the frontal, vertical and occipital shields; vertical four sided, diamond shaped; occipitals large, rounded behind; no superciliars. Eye large, pupil elliptic, erect; upper labials four, the 3rd and 4th much larger, the 3rd below the orbit, caudal disk well defined, nearly as long as the tail; scales two keeled; apex of the disk flattened, entire, anal bifid. Subcaudals 9, some entire; scales in 16 rows, on the neck 19. Length 47 lines. Fig. No. 5.

("Silybura brevis," "Shorttii" and "Macrolepis," a Ceylon species, have a well defined head with broad snout and large eye. "Silybura Elliotii," "Beddomii," and "Ocellata" have a very pointed snout and small eye as in the genus Rhinophis.)

Rhinophis Sanguineus (R. H. B.)

Scales of the body large, in 15 rows, of the anterior portion of the trunk sometimes 17 rows; rostral protruding, very sharp, conical, horny, produced back and covering the conjunction of the nasals; nostril in front of nasal shield; eye very small and obscure in front of ocular shield; four upper labials, 1st small, 2nd, 3rd and 4th large. Caudal disk nearly as long as tail, oblong, covered with excrescences, a red streak down the centre and one on each side; colour of body bluish black; belly bright red with blackish mottlings; anal bifid; subcaudals of the male 9 or 10 pair, each with 4 to 6 keels, and some of the approximated ventral plates and a few of the lowest two rows of scales also keeled; female subcaudals 6 or 7. Total length of largest male 13 inches, female 10 inches. Fig. No. 6.

I procured several specimens of this species at Cherambady in the Wynaud. I have not met with it elsewhere.

Rhinophis Microlepis (R. H. B.)

Scale of the body small, in 15 rows, of the anterior portion of trunk 17, of the neck 19. Caudal disk oblong, orbicular, half the length of tail, covered with excrescences, which are confluent into streaks; subcaudals 10, anal bifid; head scales as in "R. Sanguineus," but rostral less sharp; colour of body greyish black, with indistinct dull yellowish white mottlings; belly yellowish white, with dark mottlings; tail beneath yellowish with a broad black spot. Fig. No. 7, magnified.

I procured this on Mr. Minchin's Estate in the Wynaud.

Plectrurus Perrotteti.

Very abundant at Ootacamund; scales of body in 15 rows, of neck 17; *one small supra orbital shield* over each eye, *eye rather large*. Fig. No. 8.

Plectrurus Wynaudensis (R. H. B.)

Colour bluish black, with broad white blotches on the belly, which become larger and more numerous towards the tail; tail uniform bluish black; scales round the body fifteen, round the neck sixteen or seventeen; rostral scarcely produced back between nasals; *no supra orbital*; muzzle more obtuse than in P. Perrotteti; *eye small*. Subcaudals eleven pair, anal large, bifid; tail compressed; *scales smooth, terminal spinose scale ending in a single sharp prong*. Fig. No. 9.

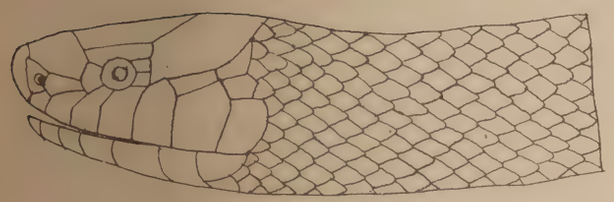
Procured at Cherambady in the Wynaud.

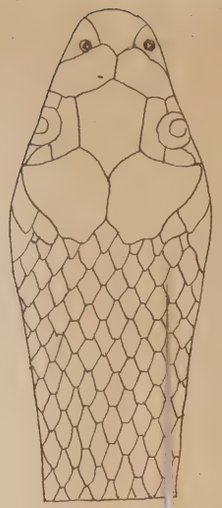
Plectrurus Güntheri, (R. H. B.)

Scales of the neck in 17 rows, anterior portion of trunk in 13 rows, of the rest of body 15 rows; head shields as in P. Perrotteti, only the rostral is not produced quite so far back. *All the scales of the tail* 5-6 *keeled*, and some of the approximated scales of the body also keeled; *terminal scales of tail with* 4 *sharp points* and covered with small tubercles; abdominals 172, and a bifid anal. Subcaudals 12. Total length 13 inches, circumference 1 and $\frac{3}{8}$th of an inch. Colour of body a bright purple, belly yellow, the yellow colour rising up on the sides of the trunk into irregular pyramid-shaped markings, and the purple colour descending in the same way down to the abdominals.

I procured this very fine species from Walaghat on the Western slopes of the Neilgherries. I have great pleasure in calling it after Dr. Günther. Fig. No. 10, magnified.

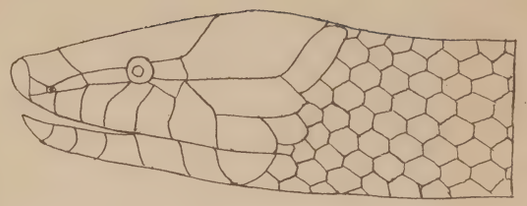
Nº 1.

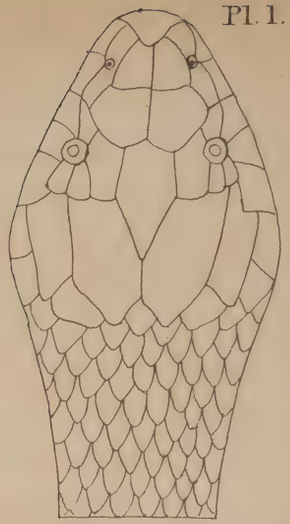




Oligodon brevicauda.

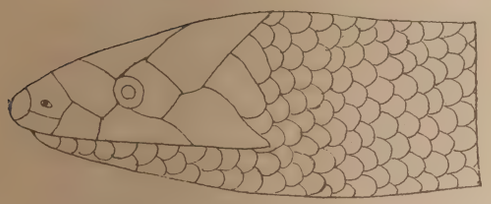
Nº 2.





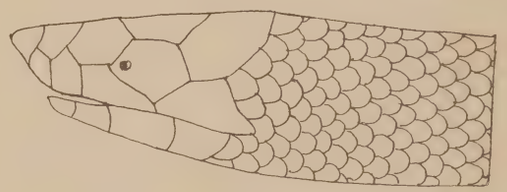
Callophis (Elaps) concinnus.

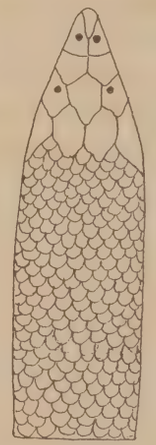
Nº 3.

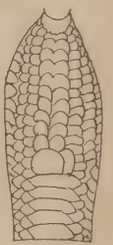


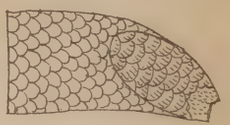
Silybura Shorttii.

Nº 4.

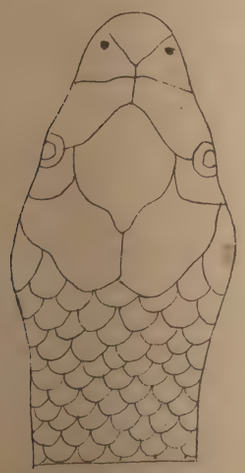








Silybura ocellata.



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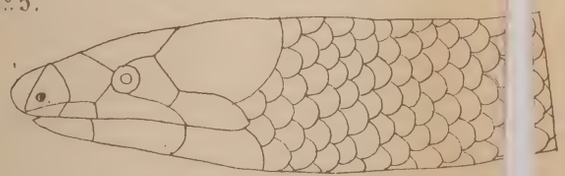

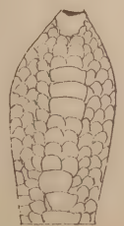

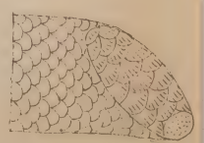

Silybura brevis.

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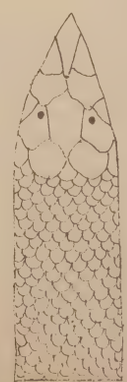
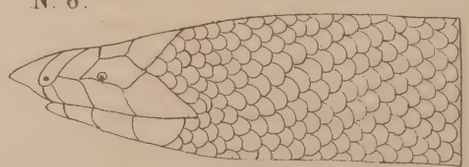
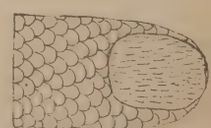




Rhinophis Sanguineus.

a.



a. Tail of the male, underneath view.

Lith.d by J. Dunphy. Govt. Lith. Press Central Office of P.W. Chepauk. Jan.y 1863.

Transfer by C. Moorthy

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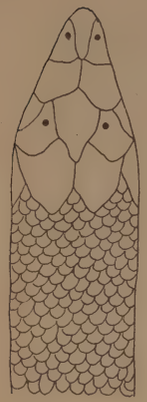
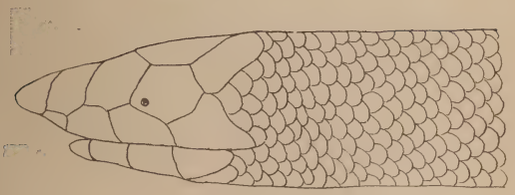
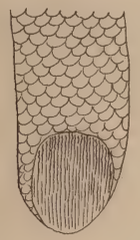




Rhinophis microlepis.



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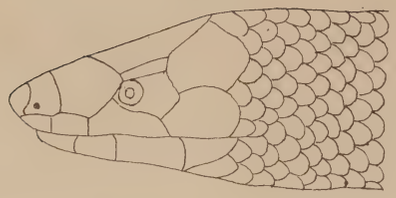

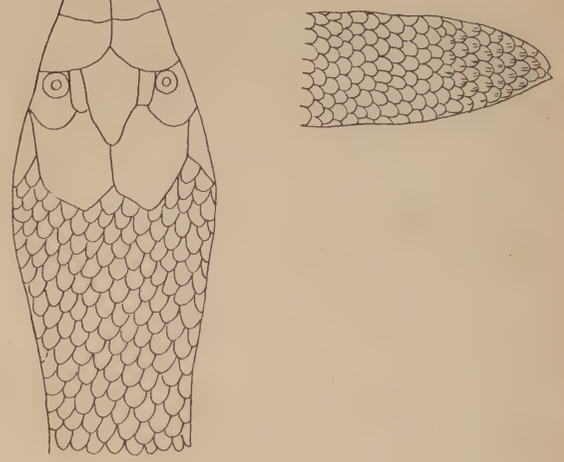

Plectrurus Perrotteti.

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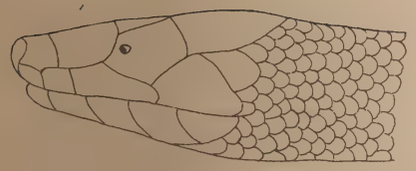

Plectrurus Wynaudensis.

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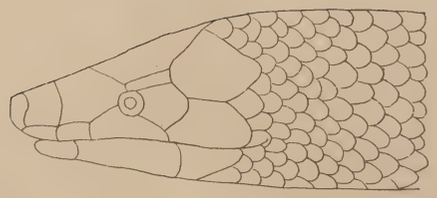

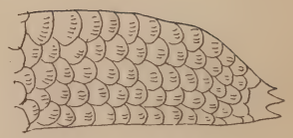

Plectrurus Guntheri.

Transfer by G. Heefke & Lith.d by J. Dumphy, Gov.t Lith.c Press, Central Office of P.W. Chepauk Jan.y 1863.

Art. V.—*Considerations as to the possibility of preventing the occurrence of Traumatic Tetanus.* By J. J. Wood, Assistant Apothecary, Madras Army.

That a considerable part of the actual practice of Medicine and Surgery is *preventive* in its intentions, no one, who gives the matter consideration, can doubt.

Setting aside Sanitation, which has for its object the prevention of *disease in general*, we may here remind the reader of the means, both Hygeinic and Medical, that are not only recommended, but in several instances practised, for the prevention or warding off of some *particular diseases*, such as small-pox, jungle fever, cholera, scurvy, phthisis, apoplexy, hydrophobia and several others. Indeed, we now and again observe a certain line of conduct in our treatment of cases, whether medical or surgical, *more with a view to the future than the present.*

Being forewarned, by the experience of ages, of the possibility—*the mere possibility*—of the supervention of graver evils in the really or apparently "trifling cases" under our care, it is our duty to anticipate those evils (in practice) by particular and careful management. Not only is 'prevention better than cure' in many instances, but prevention is, in many more, the only remedy, cure being problematical or out of the question.

In Dr. Copland's Dictionary of Medicine there occurs this passage:—"The prevention of Tetanus or Trismus can rarely be entertained by the physician, as the circumstances indicating the contingent occurrence of the malady in its idiopathic form are seldom sufficiently marked, and still seldomer come under his cognizance. But it is a very important consideration to the Surgeon."

A paragraph here and another there, in a few of the *comparatively* older works on Medicine and Surgery* may be put down as all that I have ever seen on the subject, while some of the *latest* professional authorities appear to ignore it altogether. This, in addition to the fact, that I have not yet *witnessed* the recovery of a case, either of Traumatic or even Idiopathic Tetanus, though in the

* See Copland's Dictionary of Medicine, 1858.—Art. Tetanus.
See also Bransby Cooper's Lectures, 1851.—Art. Tetanus, page 89.

service some eighteen years, led me to give the matter a careful consideration, and commit it to paper.

I am all the more encouraged to do so, from their appearing to be a belief in the possibility of its prevention among some few of the members of the service, both Surgeons and Apothecaries, who have accordingly adopted measures (each somewhat differing from the other, as might be expected) towards the same end.

A man, we will suppose, is brought into hospital with a wound, either lacerated or gun-shot, or some other such injury. The wound is immediately examined, foreign bodies, if present, are removed; hæmorrhage is arrested; in a word the injury is dealt with according to the rules of Surgery, and is finally "dressed."

The position of the injured part is now attended to; the patient directed to keep quiet; and febro-inflammatory complications watched for and met by particular treatment. A purgative is pretty generally administered at the outset, unless there exist reasons against it, and the patient put upon a low diet.

The case, to all appearances, proceeds favorably,—perhaps the wound is reported to be "cicatrizing kindly;" every thing, in fact, going on—or rather, looking—well one day, but on the next, the patient merely complains, perhaps, of having "*caught cold.*" "How?" "Why, sir, I feel my jaws stiff; I can't open my mouth freely." Alas! why does the doctor look graver than usual? He knows how serious a case is in his charge *now* to the "kindly cicatrizing" wound of *yesterday;* in a word, he knows but too well—or at least, he suspects but too strongly, that tetanus has announced itself!

Now the question arises:—Is it to be cannabis, aconite, opium, chloroform, or what? Apply an anodyne lotion to the wound; clear his bowels out with croton oil and calomel, or turpentine and castor oil; and then steadily push on so and so without delay. Fortunate, indeed, if these means succeed, and how seldom do they!*

It is true that Medical men invariably attend to the first warning notes of danger; and various are the premonitory

* "In *Acute traumatic* cases the prognosis is most unfavorable, and there is scarcely a well-authenticated instance of recovery on record." System of Surgery. Holmes, 1860, Vol. I., p. 317.

signs of approaching mischief left on record by such men as Baron Larrey, Richerand and others: but it is not often that these early threatnings are observed; and when they are, how powerless are we to avert the disease itself!

Therefore, does it not behove us to reflect seriously if such things cannot be warded off in time;—to examine—to study—if there are not means within our reach, both physical and medical, to place the patient in as favorable a condition as possible, (not minding the cost pecuniarily,) in order to prevent, in some cases at least, so dreadful a termination,—so painful a death?

The practitioner will find it his duty, in certain cases of "wounds and injuries," in accordance with established rule, to use the knife or other surgical instrument or apparatus, according to existing peculiarities, but with which this paper has little to do. Whether the knife be used or no, (and we would generally use it early, if at all,) sundry other suggestions are here made for the consideration of the readers of this Journal.

First then, as to the dressing of the wound.

One of the alterations I would make in this part of the treatment (were I in charge of a case) would be the preference of *slightly warm* or *tepid* water to that of *cold*, (so commonly in use both for bathing the wound with at first, and as a dressing or application afterwards,) more particularly in cases of extensive injury. Who would apply cold to an extensive burn or scald? Then why apply it to large open wounds, where, if there are not any large nerves, there will, of a certainty, be numbers of small nervous fibrils, cut, lacerated or otherwise mangled? Is *cold* more agreeable, or *more natural than warmth* in such cases? Would any harm result if we substituted tepid for cold water?

No matter what the nature of the arguments are, *in favor* of the use of cold applications after an injury, nay, more, in the cure of tetanus itself, there is quite enough on the *other side* to prove, that it is sometimes a greater agent of mischief than it is of good, and therefore should not be trifled with. Are there not cases on record, of either exposure to cold air or the application of cold water, after an injury, rapidly bringing on tetanus?

The Hindoos inhabiting this part of the country, never

bathe any form of wound—as a rule—with cold water, for two reasons, for, *say they*, it will cause either "Junnee;" (which generally means tetanus) or bring on suppuration, thereby preventing primary adhesion. They, the Hindoos, are, of all the residents in India, the most liable to tetanus, and (as almost every error or system of error has some degree of truth for its foundation,) it is, at least possible that there are some reasonable grounds for the first part of this tradition among them.

In addition to bathing wounds with ordinary cold water, it is the practice often to apply a greater degree of cold in the shape of *evaporating* lotions to *recent* injuries, with the view of its acting as a sedative in preventing excessive inflammation,—in other words, to keep the action that must necessarily follow an injury, within salutary limits. But we have other sedatives that may be employed with this intention, (opium for *example*) that would, in my humble opinion, effect the purpose better, without the inconvenience and discomfort, not to say danger,* attendant on the employment of the evaporating lotion.†

Various as are the applications in cases of recent injury, I am most in favor of some strong anodyne or sedative lotion applied *tepid*. If union is expected to take place to any extent, and the "bloody rag," collodion, or adhesive plaister has been accordingly used, it would be better, I think, to convert the opium, extract of belladonna or other substance, into a thin paste or rather paint with water, and to brush or smear it carefully all round the wound to the extent of two or three inches; and on the distal side of the injury to five or six, for obvious reasons. And I would apply the opium or other anodyne, *freely* even in lacerated or other wounds of the *scalp*, without the least fear of bad consequences.

Instead of applying cold, which I think adds to the injury, (particularly in the weak and irritable,) we should use *soothing* measures, such as warmth and (above all) local anodynes. Or, if permitted to express myself in figure, I would say, that we should so "*drug*" the *sentinel* nerves

* A Medical Officer, with whom I had a conversation lately on the subject, told me that he was perfectly satisfied from experience that the surest method of bringing on tetanus in the wounded was the use of cold applications; that "THE *medicine, above all others for causing tetanus, was cold!*"—J. J. W.

† Let the use of the cold, from some cause or other, be intermitted for a while, and the consequences are, to say the least, not desirable.—J. J. W.

at the *attacked outpost*—the injured part—as that they shall be rendered quite incapable of *telegraphing* any thing *to*, or *communicating with, Head Quarters*—their great nervous centre.

We are advised by some authorities, *after tetanus has come on*, among other attentions to the wound, to apply poppy fomentations, with opiate or belladonna lotions.* This is *perhaps*, good, (and should never be omitted when the case comes under our care in the first instance with tetanus already developed: but would it not be better whenever we had the opportunity) to *anticipate* that disease by the use of these very means before hand, *i. e.*, from the beginning?

An experienced Medical Officer in our service invariably orders a solution of opium, with or without acetate of lead, as an application to certain injuries from the period of admission up to that of cicatrization; besides the administration of opium internally.

"To prevent tetanic affections from arising after wounds and chirurgical operations, I understand it is almost a universal practice on board ships of war to mix tincture of opium with the dressings, and that since this practice has been adopted these complaints seldom occur. As a prophylactic, I should be much inclined to adopt this mode of treatment in preference to that proposed by Dr. Clark."†

While the patient's wound is being dressed, or even before if possible, *a full anodyne* (composed of any drug or drugs, according to circumstances) should be administered, *cauti-*

* "These steps" (alluding to certain surgical proceedings) "being taken, it may possibly be attended with some advantage to pour a small quantity of a strong solution of opium into the wound, dressing it afterwards with a little lint dipped in the same, and laying a pledget spread, with some digestive ointment over it, and an emollient poultice at top. Every time the dressings are renewed, which should be twice, or thrice a-day, the wound is again to be wetted with the solution." Thomas's Practice of Physic.—Edited by Algernon Frampton, M.D., Cantab. 1853.—See also Druitt's Surgeon's Vade Mecum. Art. Tetanus.

† "Dr. James Clark, in his Treatise on West India Diseases, informs us, that being unable to cure the symptomatic tetanus, he endeavoured to prevent it; and for this purpose, after wounds and punctures, he gave two or three grains of calomel twice a day till a gentle salivation came on, and he pursued the same plan after operations. Out of fifteen patients, after amputation, that were treated in this way, only one died, and he was in so irritable a state before, that bad consequences were dreaded. In those who had been wounded or punctured, the success was greater; two only having been lost out of a great number since this mode of practice was begun."—Frampton's Thomas's Practice of Physic.

ously combined with *stimulants* if much shock or collapse be present. The stimulants will be all the more necessary if the patient is an old habitual drunkard, or has been on a drinking-bout lately. Here the practitioner will exercise his discretion as to whether the stimulant shall be some form of alcohol, ammonia or any other. And the anodyne should be repeated frequently enough to lull all pain and sense of discomfort locally, to calm the nervous system, and prevent the patient from dwelling mentally on the nature, seat or extent of the injury. We must, I beg to repeat, by the free administration of opium or other sedative, render the nervous system "insensible as it were to the local mischief."

Not only is opium freely administered in cases of wounds and injuries of the thoracic and abdominal viscera, with sufficient reason; but it is, I think, a pretty general practice to administer opiates after injuries of other parts also, whether severe or not, with a view of soothing pain and procuring sleep, for the first day or two, *but discontinued afterwards altogether.*

There are some few Medical Officers in our service, however, who not only administer the drug in full doses at the commencement, but continue it, (in some cases,) even while the wound is cicatrizing.

This latter is certainly the safer plan of the two, and should, in all severe or *suspicious* cases at least, never be omitted.

Some, in conjunction with the opium, prescribe tartar emetic, brandy, &c., as necessary. And it appears to me that it would be advantageous, in many cases, to combine quinine or other tonic with it instead.

The practitioner should then, at leisure, (*i. e.*, after the wound is dressed, and the patient has been comfortably put to bed) make particular enquiries into the state of his *general health*, his *history*, his *habits* and so on—a practice common enough when treating other cases, and which we should not altogether overlook here, even in cases of *the most trifling injury, particularly in this country.*

The enquiries regarding the general health may lead *even* to the discovery of one or more of those *derangements*, which are considered *exciting* causes of idiopathic tetanus; and which, it is reasonable enough to suppose, might prove *pre-disposing or concurrent* causes of the traumatic variety.

Accordingly, do we suspect the existence of worms? (and this will be all the more probable if our patient is a child.) Is he habitually the subject of constipation? Have we reason to think that the colon is loaded with scybala? The remedies are at hand.

Are the secretions of the liver and bowels unhealthy, brought about by intemperance, indolence or mental disquiet; evidenced by the "motions" being dark, tenacious and offensive; or clay colored? Or are the evacuations otherwise unhealthy-looking, as is nearly always the case both previous to, and during, an attack of tetanus? Here we might, I think, not only with safety, but with advantage, adopt the practice of Mr. Abernethy, by exciting the various glandular organs that pour their secretions into the intestinal canal by the exhibition of small and repeated doses of certain medicines.* In these and similar cases, I am an advocate for attending to the chylopoietic viscera until a better state of matters is brought about,—until, in fact, the evacuations assume the healthy "wet-rhubarb" color, so much dwelt upon by the above-named authority.

Is he anæmic? Our course is clear.

If he has lost much blood by the accident, it becomes imperative on us, for more reasons than one, to throw in blood-material as *quickly* as possible; and here, in addition to solid food, such as meat, bread, &c., (if the patient can make use of them) it would be well to administer the "egg-flip" with, or without, beer or wine according to circumstances; and this could be alternated with Liebig's or other soup. And I suppose, the medicines most indicated here, are iron and manganese, with possibly a little quinine.

Is he the subject of debility from other causes, such as poor food, long continued discharges, &c.? Having ascertained the cause, our duty is plain.

Is the patient a Hindoo in poor circumstances? I would place him, if his caste prohibited the use of meat, &c., on the wheaten cake and milk, together with dhol and a fair allowance of alliaceous or cruciferous vegetables, besides an occasional meal of any thing else he fancied. With the Mahometan, Chinese or other people, the diet is easily regulated.

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* And the medicines I would *select* for the purpose are the following: viz.: Blue Pill, Aloes, Manganese, Ipecacuanha, Rhubarb, Colchicum and Castor oil.

Is the wounded man a plethoric subject? And here I would beg leave to remark that we should endeavour to lessen the volume of the blood and relieve the oppressed state of system, if such exists, not by bleeding—not by taking away a portion of that blood which is doing the work of the economy at the time, but simply by separating from it the effete or old blood,—in other words—the debris of the system, which, it is reasonable to suppose, is, in these cases abundantly mixed up with it. And this separation or filtering, we should attempt to effect through Nature's own channels, *i. e.*, by soliciting the various depurating organs, as the kidneys, skin, the liver, the bowels—or rather the glands that stud the mucous surface of the intestinal tract, &c.

I would, *even*, with the view of preventing excessive inflammation, adopt a sedative or depressant plan by medicine, but *as a rule*, I would avoid the use of the lancet, (even in the European) recollecting that the system can but ill spare any sound blood, which may perhaps, be required for the repair of some extensive injury, and all the more, if that injury is to heal by the second intention.

The loss of sound blood from venesection will be further felt should Tetanus actually come on; for that disease, which runs a regular course, will have put the patient's constitutional powers sorely to the trial before its decline, and his strength must have been indeed well supported, both before and during the attack, if he does not *then* sink from exhaustion.

In a word,—setting aside the consideration of particulars as given above,—the practitioner should look well, *not merely* to what the patient came under treatment for, viz., a lacerated, gun-shot or other wound, but to the *general health*, endeavouring to correct whatever was at fault, and to build up his strength, after the first burst of action was over; and thus prepare him for any thing or every thing that may possibly happen, (and their name is legion) as a consequence of injury.*

* "I trust I am, therefore justified in inferring that to the improvements in the medical and surgical treatment of wounds, in *cleanliness* and *ventilation*, avoiding at the same time *exposure to currents of cold air*, or sudden changes of temperature; in fine, to *superior diet* and *accommodation* but particularly to the greater attention paid to the state of the bowels, may be attributed the great infrequency of tetanus of late in the West Indies, when compared with former wars."—Dr. Dickson, Med. Chir. Trans. Vol. VII., p. 465, Quoted in Holmes' System of Surgery, Art. Tetanus.

Do we not *prepare* a man for an *operation*, by bringing him into the best possible state of health? and is he not treated with the greatest care afterwards, in order to prevent excessive inflammation or any other unwished for evil, —in other words, that the operation may be a successful one?*

And if all this attention is deemed necessary, in a *carefully*, "*scientifically*" conducted operation, where the wound is a *clean incision*, surely it is not superfluous to pay some such attention to the constitution after such injuries as are frequently followed by Tetanus?

The *particular habits* of the patient should never be lost sight of;——and this appears to me *one* of the most important points to be attended to, in the treatment of "wounds and injuries," particularly in *Hospitals* in this country, with a view to the prevention of Tetanus.

We are aware that many, if not most, Europeans, whether in civil or military employ, as well as a good number of their descendants—the Eurasians, habitually take some form or other of alcoholic stimulant; some of course, in greater excess than others. And many of them use Tobacco in some one shape at least, and often immoderately.† Turning

* "The Preparation of a patient for an operation is a most important element in its success. The object is to have every organ and every function in as healthy and tranquil a state as possible. Recourse should be had to regular diet, aperients, and gentle alteratives, with or without small doses of sedatives, till the pulse has become quiet, the tongue clean, the bowels regular, the liver, kidneys, and skin in good order, and the mind cheerful. Moreover, it is best not to perform an operation in very cold weather, especially upon the eye."

"The After Treatment is no less important, and should be conducted so as to ward off the most probable sources of danger—whether sinking from shock, or from loss of blood, or the occurrence of inflammation. The characteristic tendency of disease, at the present day, is decidedly toward phlebitis, erysipelas, diffused inflammations, and other maladies of a low type, and as we observed, when speaking of the prevention of phlebitis, it is most important that the patient should be supplied with beef-tea, and other nourishment, in sufficient quantity to maintain a healthy state of blood, and that he should be kept quiet. One of the most successful Surgeons of London, always gives his patients half a grain of opium every five or six hours for the first two or three days after an operation, for the purpose of tranquilizing the nervous system and his success proves the benefit of the plan." Druitt, edit. 7th, page 629.

† It may not be out of place to mention here that I was an eye-witness, on more than one occasion, to a party of European soldiers smoking the *hemp* or *Ganjah*, in the ordinary native pipe or chillem; and which practice, (if I remember rightly) they told me, was taught them by a Faquir. Several of these smokers have been now and again seen stealing into Barracks after night fall "on all fours," in order to answer the Roll-call at 8 o'clock.

to the ranks of the sepoy, made up, as it is, of so many various castes, we find the Pariah, in imitation, of "Master," imbibing, as often as he conveniently can, either Toddy or the country Arrack: the Mussulman, though he seldom indulges in spirits, will be found frequently a slave to the use of opium or cannabis, after one fashion or other: while the Rajpoot habituates himself almost solely to the various preparations of cannabis or ganjah.

And these vices are not confined merely to the natives in the service, but among the rest will be found thousands who have given themselves up to the use of some drug or other, not even excepting the Nux Vomica. The Faquir in particular, whether he obtains sufficient daily food or not, has almost always a goodly supply of the "leaf of delusion" on hand, which helps him probably to pray all the more fervently for the extirpation of the unbeliever.

Now from the moment a man is admitted into hospital until he is discharged, he is laid under certain restrictions; one of which is, that he must not leave the premises without permission; and another, that he must not use any article in the shape of food, drink, or any thing else without the permission of the Surgeon, or his assistant the Apothecary.*

The patient will, by these restrictions, be compelled to relinquish, (in the generality of instances) the use of something he has been habituated to for, perhaps, a great many years, unless he has the courage to continue it in defiance of all rules, as I have myself seen; or else, endeavour to obtain permission for its use, thus making a voluntary confession, which but few natives in the service will do, from their being "men of caste," "men of character," or from the fear of losing either promotion or favor.

Dr. Waring, in the introduction to his "Manual of Practical Therapeutics," says, "it should be remarked, that whenever a person accustomed for a long period to a certain amount of stimulus, is suddenly deprived of the article in which he indulges, he is apt to become alarmingly depressed; and in order to sustain the powers of life, it is necessary to

* This remark applies *chiefly*, of course, to European hospitals, whether Civil or Military. But though the sepoy in hospital, as a rule, obtains his food from the Lines, yet he is watched narrowly enough by the Hospital Havildar, Sentry, or Orderlies, to prevent any thing going on contrary to "Ookhum."

continue the accustomed stimulus. Whilst in charge of the Jail at Mergui, I have often been obliged to give to Chinese prisoners large doses of opium, not only to prevent their falling sick, but to enable them to perform their daily tasks. When I first assumed medical charge, I attempted, in several instances, to break them of the habit, by gradually decreasing the accustomed quantity; but, in almost every case, such an alarming degree of nervous depression supervened, that I was unwillingly obliged to have recourse once more to the use of opium in the accustomed dose. It is nearly the same with alcoholic drinks; every one is aware of the necessity of continued stimulus, in reduced quantities, in the treatment of Delirium Tremens. It is always a matter of importance, therefore, to ascertain as far as possible the previous habits of a patient, in order to enable the practitioner properly to regulate the treatment of the case."

And if the breaking off abruptly of any long continued habit be attended with more or less danger, as we know it to be, even in tolerably good health, it certainly is a hundred fold more dangerous after the sustaining of a severe injury.

We must, further, remember the *fact* that if the long continued habits of a patient are materially interfered with by hospital restrictions, *even the reparation of an injury* will, if it takes place at all, go on slowly, imperfectly, and of course, unsatisfactorily.

Being fully convinced then, that some degree of attention to the habits of the patient is *necessary* from the commencement, not only for his general well being, but for a painless and uncomplicated progress to recovery, I would, setting aside *every other* consideration, look upon that necessity, in a *medical* point of view *only*.

I would give the European, whether soldier or sailor, his allowance of beer or spirits as if nothing unusual happened, unless there appeared sufficient *medical* reason against it; and though he was unable (from the nature of the accident) to leave his cot in the ward to go into the verandah of the hospital, I would permit him—setting aside hospital regulations in his case—to amuse himself, as often as was his wont, with his pipe or cheroot, according to circumstances. In the same way with the sepoy, camp-follower or other native, having ascertained the peculiar stimulus he was

accustomed to, I would permit him to use it, taking care, by all means, that I was not imposed upon.

We must, in many cases, look upon the stimulus to which a man has become accustomed, not as an agent of evil after an injury, but as an agent of good, for more reasons than one; the chief being, that that stimulus has become *almost as necessary* to the proper working of the great centres of life, as the very blood itself. In a word, it may, *in some cases at least*, be reckoned among what the ancient physicians termed the "res non-naturales," *i. e.*, among those matters, which, though they do not enter into the composition of, or rather, though they do not belong to, the body, yet are, at the same time, necessary to its existence.

However much the physician would feel inclined to unite with the stoic or the moralist, in condemning and discountenancing such practices, he would do better, in my humble opinion, to defer the lecture, the rebuke, and his learned advice till after his unfortunate fellow-creature was out of all danger. It would be time enough then to arrnge studiously about the gradual breaking off of the habit, if such be possible in every instance.*

All that has been said before, regarding the treatment of "wounded," with a view to the prevention of tetanus, may be briefly summed up here:

1. The avoidance of evaporating lotions, and even of ordinary cold water, to the injured part.

2. The local use of tepid anodyne or sedative medicaments, from the period of admission to that of cicatrization, *as a general rule.*

3. The internal administration of sedatives for the first few days or as long as pain was complained of, in the slighter cases; but *continued* till the wound had *completely cicatrized* in severe or suspicious ones.

4. The combination of stimulants with the sedative, *immediately* on admission, if necessary.

5. Depressants, &c. with the sedative, in the robust

* A very unusual, but sensible custom, prevails in the Chinese Pauper and Police hospitals at Singapore, which is, of supplying *every Chinese* patient *accustomed* to it with a certain preparation of opium called "chandoo," and a pipe for smoking it in.

European, in order to keep inflammatory action within bounds.

6. Attention to the general health, by removing all sources of irritation; and building up the strength with tonics and nutritious diet.

7. Attention to the habits of the patient.

8. (It may be here added); the keeping the surface of the body comfortably warm by appropriate clothing.

And finally, recollecting that the longest period between the receipt of the injury and the accession of tetanic symptoms is but a short one *comparatively*, (and particularly when the patient's general health is very much out of order) we should lose no time,—we should do that which we intend doing as expeditiously as possible,—or rather, as quickly as is compatible with safety.

It is not, of course, presumed that, by following out some such prophylactic plan as the foregoing, we would succeed in warding off tetanus in every instance, recollecting that this affection comes on occasionally *very soon after* an injury, where there would be little or no time for action; but I somehow feel certain that it would—in the majority of cases at least—tend very materially to diminish the chances of attack.

And if, in spite of our prophylactic measures—our well-meant attentions, some patient should after all become the subject of tetanus, it is not difficult to understand how he would be better able to "weather out the storm," from having every thing, as the sailors say, "hauled taut."

It may be urged that as every injury is not followed by tetanus, would it not be superfluous to anticipate that disease always by prophylactic treatment? That must be left entirely to the judgment of the practitioner. He is aware that tetanus, (though it may succeed *any form of injury*, occurring *in any part of the body,)* yet, *oftener supervenes on some particular forms*, such as *lacerated, punctured and gun-shot wounds*, more especially when these have been inflicted on *parts* of the body which are *very tendinous*, or *abundantly supplied with nerves*, such as the *hands* and *feet:* and he knows, further, that the rice-eating Hindoo is more liable to it than the better-fed Mahometan,

and the latter than the European.* In fact, knowing, from both reading and experience, the cases in which it was most likely to occur, he would do well, as the responsibility lies on his own shoulders, to remember the old saying, that "the safest way is the best."

Art. VI.—*On the Nature, Pathology, and Treatment of Tetanus, considered especially with reference to the necessity of the employment of Antiphlogistics—locally and generally.* By Thomas Lowe, Medical Officer, Sappers and Miners.

The frequent occurrence of tetanus after the receipt of gunshot wounds and other injuries, and the difficulties experienced in the treatment of this terribly fatal malady render the subject sufficiently important to induce me to set before the readers of this Journal a brief consideration of this disease, with such notes as I have from time to time made, with a view to the elucidation of the pathology and treatment of the malady.

What I may have to offer in explanation of my views and the plan of treatment I believe to be most rational and *secundum artem*, is brought forward in order to induce others to adopt a course of medication sanctioned by the pathological nature of the disease, rather than to rely upon a plan or method resting more or less upon little other than empiricism.

We observe from numbers of reported cases that tetanus subsides under the most opposite methods of treatment. How this happens has not yet been explained; perhaps the disease, so diversely treated, would, of itself, in many instances, have died out without the various doubtful aids relied on by the several advocates of woorari, aconite, tobacco, opium, quinine, brandy, and a legion of other medicaments.

* I have been informed by Mr. Assistant Apothecary P. Kinsley, who was for about five years at the Chinese Pauper and Police Hospitals at Singapore, that he never saw a case of tetanus in a Chinaman, though the number admitted there with all kinds of wounds and injuries is very great at all times. Is this due to their living largely on animal food, or to the indulgence of being permitted to *continue their practice* of opium smoking *in hospital*?

Tetanus, as we all know, is liable to follow every description of wound, no matter upon what part of the body it may be sustained.

The medical history of every campaign shows how lamentably futile our methods of treatment have proved; the records of garrison practice, and practice in great Civil hospitals, also testify to the usually intractable nature of this complaint.

Tetanus occurs in all countries, but, as a rule, is more frequently observed in tropical than in cold climates; it is also more prevalent in low, damp, malarious situations in hot climates, especially if the thermometric range be great. Climate also makes a marked difference in the *intensity* and therefore danger, of the disease. A climate wherein the mid-day heat is followed by considerable cold and dampness at night, is more likely to aggravate the tetanic attack.

In the Peninsular war tetanus followed every kind of wound and appeared in every *stage* of the wound, and out of several hundred cases a few only recovered. In the Egyptian campaign both the French and British armies sustained considerable loss from this disease, as the records of Baron Larrey and Sir J. MacGrigor inform us. The former celebrated Surgeon marked the similitude of this disease, as it occurred in Egypt, to hydrophobia. Although Hippocrates,* and his followers, for centuries, considered acute traumatic tetanus mortal, the archives of more modern Medicine and Surgery furnish us with sufficient numbers of cases of recovery to shew that the disease is not of necessity mortal.

Upon what grounds that learned physician, the late Dr. Todd, could assert that *acute traumatic tetanus was always fatal,* I am at a loss to understand: always fatal perhaps, *in his hands* it may have been. There can be no doubt that it is much more rarely cured than *idiopathic* tetanus.

Extreme heat *alone* does not appear to render wounded men more liable to suffer from this disease. On the contrary, I learn that the wounded during the hot weather campaigns of 1857 and 1858 in India, *when the nights were scarcely colder than the days,* were almost wholly free from tetanic attacks. Not a single case during these seasons came under my own observation, although I had almost every description of

* De Morbis Popularibus, Lib. 5—7.

wounds to attend to, in both Europeans and Natives, while in the field, and in the large field-hospital for Europeans in Cawnpoor.

There can be little doubt entertained, I believe, that a wound, in a constitution more or less deranged, is the *proximate cause* of tetanus; but we must look for the *exciting cause* elsewhere.

That the constant respiration of a poisoned—although to the vulgar apparently pure—atmosphere not only induces a proneness to zymotic diseases, but that it will, of itself, apart from any sudden local injury, engender tetanus is beyond doubt. Dr. Carpenter observes,* "the dwellings of the great bulk of the population of Iceland seem as if constructed for the express purpose of poisoning the air which they contain. They are small and low, without any direct provision for ventilation, the door serving alike as window and chimney; the walls and roof let in the rain, which the floor, chiefly composed of hardened sheep-dung, sucks up; the same room generally serves for all the uses of the family, and not only for the human part of it, but frequently also for the sheep.... the fuel employed in the country districts chiefly consists of cow-dung†..... the population is stationary, and in some parts actually diminishing;..... this is chiefly owing to the extraordinary mortality of infants from *trismus nascentium*, which carries off a large proportion of them between the fifth and twelfth days after their birth."

"The average mortality for the last twenty years, during the first twelve days of infantile life, being no less than 64 per cent. or nearly *two out of three*." In the Island of St. Kilda, Western Hebrides, the same disease prevailed under the same conditions, *four out* of *every five* dying from *trismus nascentium* between the eighth and twelfth days of their life.

That this disease is dependent on an impure atmosphere, and is preventible, is apparent from the fact that in the Dublin Lying-in-Hospital, up to the year 1782, the mortality from it was 1 in every 6 children born. Improved sanitation reduced this to 1 in 19½: and, during seven years, while Dr. Collins held the mastership of the institution, the number of deaths from this disease was reduced to only

* Principles of Human Physiology, 4th Ed., pp. 554—555.

† Change the name to *India*, and we have in this description a perfect picture of the native dwellings of this country.

three or four yearly. A worse state of things was once the case in the London work-houses, but, happily, by improved ventilation this was marvellously reduced.

We have shown that intense heat will not induce tetanus, that extreme cold, in northern latitudes offers no immunity from an attack; but it will appear that a deranged condition of the blood brought on by exposure to putrescent miasmata, in any climate, will so alter the state of the *nervous system especially*, that almost any local injury appears sufficient to call up the latent evil which manifests itself through the motor tracts in violent spasms, whenever sudden and marked atmospheric changes take place.

Dr. Smith* very pointedly refers to atmospheric changes, coupled with inadequate supplies of food, and cold as causes of the frequent occurrence of tetanus in Hyderabad. He says "the annual susceptibility begins to manifest itself immediately after the first heavy fall of rain," at which period remittent fevers are common, as also other diseases depending upon "atmospheric changes and hyper-carbonization, or other vital alterations of the circulating fluid." Deaths from tetanus after parturition, he informs us, are so common in Hyderabad, "that the announcement of pregnancy having occurred in a respectable Mahommedan family, is heard with fear and dismal forebodings." He also remarks that the native doctors regard idiopathic tetanus as curable, "and use the actual cautery freely, *applying it to the vertex and nape of the neck.*" So that it would appear that the native doctors at least consider the seat of the disease to be in the medulla oblongata and spinal cord. In several cases of traumatic tetanus, under my own care, I could trace distinctly, I believe, the accession of this derangement to a sudden change of temperature about nightfall—the air being cold, damp, and undoubtedly, laden, and dirtied, with inappreciable poisonous effluvia.

The zymotic nature of this nervous disease, no matter in what manner it may be immediately excited, may tend to explain how some cases of cure have followed the exhibition of quinine, arsenic, and stimuli—especially in those instances which appear purely idiopathic, wherein no specific complaint has been *traced*, as in the case recorded by Mr. Busteed,† and again in the case published by Dr. Donald-

* Madras Quart. Jour., Vol. II., p. 95.
† Madras Quart. Jour., Vol. V., p. 429.

son* in which the "treatment of the case in question extended over a period of *above two months*," the patient having suffered from cold.

Dr. Donaldson remarks, in a foot note, the great thermometric changes at Coconada, where his patient fell ill, heavy falls of dew, and fogs being of frequent occurrence.

It is quite evident that this nervous disorder depends upon something more than the wound, for we observe the same in India as was remarked in the Peninsula, viz.: that it follows *every kind of wound*, and sets in *every stage* of the wound.

It would appear, then, that the accession of tetanus depends upon a previous peculiar condition of the blood, upon the persence of Zymotic matters consequent on the ordinary processes of disintegration, accumulated in the body through imperfect elimination, impaired visceral function.

That such a fermentible matter exists in the blood of tetanic patients will, I think, be conceded when we take into consideration the general state of the body, the noted tendency to putrescence in the evacuations, the absence of normal cuticular and pulmonary combustion, the depression of the vital powers, and the special local source of putrescent matter often present—a sloughing or badly cicatrized wound, or an abraded uterine cavity.

It is quite true that many severe wounds are followed by no *surgical fever*, but it is also true, on the other hand, that the most severe fever and tetanus will follow wounds and surgical operations of a trivial nature.† This *surgical fever* must have its source in external unseen causes, its development and manifestation depending on the previous condition of the body, and the presence of zymotic media, the wound giving the impetus to the general systemic derangement.

What intimate influence a change of temperature exerts upon a patient suffering from a wound and more or less surgical fever, it is difficult to say; but, that sudden change of air, or remaining in an atmosphere surcharged with inappreciable poisonous gases is the exciting cause of tetanic action, cannot be doubted.

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* Madras Quart. Journ., Vol. II., p. 401.

† As often seen in the burly draymen and porters of London.

Each organ and tissue of the body has an *elective* affinity; the blood, under certain circumstances, appears to be more susceptible to the special influence of poisons, and this susceptibility appears to regulate the morbific powers of the poisons absorbed into its current, either through the fouled air, or by the absorbents leading from a wound.

This is constantly manifested. A dozen individuals may be exposed, under exactly the same circumstances, to an animal poison. One may rapidly sicken and die; a second, sicken and die after a weary, ineffectual, effort of nature to cast out the poison; a third, sicken, and recover; and the remaining nine escape unaffected by the poison which they must have equally imbibed. So also we repeatedly witness similar instances in persons exposed to vegetable miasms.

I think there cannot be much doubt that such susceptibility is the essence of the predisposing cause of tetanus, as well as of other diseases; and that the *nervous* tissue displays a a peculiar *elective affinity* for the special poisons circulating in the blood.

Within the last twelve months, many cases, of jungle fever, contracted in the "Upper Godavery District," have been attended with severe epileptiform convulsions.

It would be well, perhaps, to bear in mind the close relationship of *epilepsy, hysteria, and tetanus*, and also the fact that severe epilepsy and hysteria as well as tetanus* have been often noticed as results of miasmatous poisoning, as well as originating in causes of an *eccentric* kind.

It would appear, as stated by Dr. Hermen, that *cold air in motion* is capable of exciting the disease. A case in point is recorded by Inspector General Taylor, in his "Extracts from the monthly reports from Chatham."† Surgeon Major Ferris says—"My Hospital Serjeant Hamilton, had rather a sharp attack of tetanus.

"I cannot account for its origin, unless it arose from *exposure on a very windy day in a third class Railway carriage*, or from a small cut in the finger received accidentally three days before from a cupping instrument."

In this case the exciting cause appears accounted for; the man was wounded, and probably with a system not over-

* Lancet, Sep. 27, 1862, p. 331. "Intermittent Tetanus during pregnancy," by T. Morris, M.D.

† Army Med. Dept. Reports for 1859, p. 325.

healthy, predisposed to tetanic action, which was, indeed induced by the *cold air in motion* "on a very windy day in a third class Railway carriage."

The cause and effect appear to me plainly indicated, as it is an undoubted fact that thousands travel every day throughout the year in third class Railway carriages without a shadow of tetanus manifesting itself:—they are not wounded.

I question much whether any case of tetanus ever occurred in a wounded person whose previous health had been unimpaired by one or several of the following causes: overfatigue; bad food, or good food in deficient quantity; anxiety; excessive excitement followed by great nervous prostration; insobriety, debauchery; malaria; or (immediately following a wound and surgical operation) surgical fever, and absorbtion of more or less poisonous matter from a neglected sloughy wound or stump.

I consider the surface of the uterine cavity after child-birth to be in much the same condition—pathologically, as the raw surface of a recent wound.

If the secretive and absorpent process necessary to the re-establishment of convalescence are deranged, or arrested, and the secretions rendered offensive and poisonous to the system of the woman, by miasm or sudden change of temperature—a chill,—then we have the condition, and materies morbi present, which now and then terminate in tetanus.

Each of the above conditions, alone or combined, is sufficient to predispose certain constitutions to tetanus. After a wound has been inflicted, more or less irritation of the nervous system follows, although a patient so suffering may have appeared robust up to the hour of the receipt of the injury.

There are few persons living in the "deltas," or on the low banks of great rivers, in the tropics, where debilitating miasmata abound, who can be said to be free from visceral disorders and nervous irritability. In such localities, or in such as are notorious for their neglected sanatory state, there is always present the unseen cause of blood vitiation, and a nidus is formed for the development of this or other diseases, after a wound gives the impetus by shock or irritation to a morbid condition which requires only a further excitement —as sudden change from hot to cold—from dry to damp

miasmatous air—to become fully developed as the disease of that nervous system which we call tetanus.

I need not detail the well known symptoms of tetanus, which are gradually increasing spasms of the muscles supplied by means of the excito-motory system.

There may be a horror of fluids and an intolerance of light and noise, similar to hydrophobia, as I have witnessed. *There is, as a rule, much constipation from the first,* and the skin is often bathed in cold perspiration ; *and constipation, it will be found, is one of the most marked effects of diseases of the cerebro-spinal and ganglionic systems.* The patient may sleep at intervals, or may not once close his eyes until worn out by the disease ; he does so in death. The mind remains unclouded to the last, the continuance of the disease depends on the severity of the disorder of the nervous system—the amount of continued nervous irritation—and the vital resisting powers of the patient. Death usually takes place on the *third* or *fourth* day ; perhaps in a few hours, or it may not ensue until the 9th or 11th day, and now and then not until the 17th or 20th day.

Samuel Cooper says,* "I had a patient, however, who lingered in the Military hospital at Oudenbosch *five weeks* with chronic tetanus before he died. This happened in 1814, soon after the assault on Bergen-op-Zoom, where the patient had been wounded and suffered amputation of the thigh."

In this instance the vital powers of the patient must have been very great ; or the nervous derangement at first but feeble; or the periods of accession of disturbed action remote from each other.

Should the disease be arrested recovery is usually protracted to a long period.

Although acute traumatic tetanus so frequently terminates fatally, yet when it becomes *chronic,* hopes of recovery may be entertained, especially when the spasms assume an intermittent character, as they sometimes do. Let us now examine the state of the cerebro-spinal system revealed by *pathological* investigation.

Pathological anatomy has demonstrated congestion of the pia-mater and other membranes of the brain and spinal

* Surgical Dicty. Art. Tetanus,

cord; bloody serum in the spinal canal; inflammation of the *anterior* columns of the cord and development therein of soft yellowish white bodies; softening of the cervical portion; adhesions between the layers of the spinal arachnoid; effusions of pus upon the membranes; vascularity of the nerves; hyperæmia and distension of the vessels of the white substance, and vascularity of the sympathetic ganglia; and, lastly, congestions of the lungs, stomach, and intestines.

Pressure of the grey matter of the cord by abnormal increase of the connective tissue of the white has also been observed.

There is extensive post-mortem rigidity of the muscles, which are often ruptured from the severity of the spasms.

The pathological condition of the nervous centres enables us to account for the *centric* and *eccentric* origin of the spasms; while it plainly indicates that the disease must be regarded as one of an *inflammatory* nature, leading to preternatural excitability of the spinal cord and nerves of the excito-motory system.

The inflammatory nature of the disease admits of no doubt: the vascularity, the adhesions, the deposits of pus in the cord, and the development therein of the yellowish white bodies, are sufficient evidence of this.

With disturbed functions there is always altered nutrition, and if the existing cause be continued, it invariably leads to *hyperæmia* and morbid development of matter, in every organ of the body. However, microscopic at first such development may be in the delicate tissue of the spinal cord and medulla oblongata, it must result in a greater or less disturbance of the normal equilibrium of the nervous force, which, if not removed, must terminate in general derangement, and, ultimately, in death.

From what has been advanced relating to the constitutional causes of this nervous disease, and the indubitable evidence of the congested and inflammatory state of the cerebro-spinal system revealed post-mortem, it will be apparent that tetanus has its origin in a vitiated condition of the blood, a special *elective affinity* for such poison being displayed by the cerebro-spinal system, disorder in the elements of which being once established, manifests itself through the excito-motory system of nerves in muscular spasms—the

latent fire being lighted up on the receipt of a wound, or by other exciting, though inappreciable, causes.

I shall now proceed to lay before the Reader, an analysis of eight cases of tetanus with the view of pointing out the inefficacy of remedies which have been and still are used empirically, (and which, I believe, cannot fail to do more harm than good) and of directing attention to the benefit derivable from a course of medication based upon pathological data and the well known physiological action of the therapeutic agents employed. When we observe symptoms of inflammation of the meninges or other organic derangements of the substance of the brain, whether idiopathic or the result of an injury, we do not administer alcohol, tobacco, opium, quinine, chloroform, aconite, belladonna, and a host of other medicines, widely differing in therapeutic properties, indiscriminately, with the view of arresting such symptoms as raving delirium, sleeplessness, coma, hemiplegia, and others; but, we adopt such a system of treatment as the pathology of the disease has taught us to rely upon with very fair hopes of success. We at least attempt to thread our way through the dark passages by the light which extensive pathological research and patient clinical observation have shed for our guidance.

Analysis No. 1.

Traumatic Tetanus—Cure.*

Gun-shot wound.—The author remarks that "this is an interesting case, not only from the favorable influence exercised on it by the *Ext. of Belladonna and Chloroform*, but also the *great quantities* of *narcotics given without the slightest effect.*"

Query. What is Belladonna ?

14*th November*, 1853.—Tetanus pronounced 18 days after the wound had been sustained.

16*th.*—*Constipation.* Ordered Calomel gr. iii., Morphia gr. ½, quartis horis, during the night; a purgative enema. Result: had *one dark offensive motion after enema.*

17*th.*—Ordered Haust. Purgant; Cont. Calomel et Morphia during the night.

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* Madras Quart. Journ. Vol. I., p. 184. Case by the late Dr. Williams.

18*th.*—*Constipated.* Remarked that up to the 20th had taken 180 Minims of Cannab. Ind., and Tinct. Hyoscyami. without the slightest effect.

Chloroform and Belladonna now ordered, and exhibited during *this* day only.

22*nd.*—Is reported to have had two evacuations *after* injection, (it is not stated when this was ordered;) *suffering* much less.

23*rd.*—*Constipated.* Ordered Haust. Purgans.

3 P. M.—*Constipated.* Ordered purgative enema.

Vespere.—Had *three dark coloured stools,* going on well.

24*th.*—Going on well.

25*th.*—No spasm. *Constipated since the* 23rd. Ordered Haust. Purgans. s. s.

Vespere.—Bowels moved twice.

26*th.*—Improved "gradually since yesterday evening. No further spasm."

REMARKS.

In the above case we observe persistent *constipation,* and the improvement noticed after each evacuation of the bowels ; and when the bowels were *not* moved a return of tetanus.

It is quite clear that sufficient attention was not paid to the condition of the alimentary canal, for Dr. Williams says on the evening of the 21st, "*bowels have not been open* for *some time,*" the patient was restless, as any one undoubtedly would be under a similar condition. But this case is brought forward as an instance of the good effects of *Belladonna and Chloroform;* while it is evident, on the face of it, that the benefit derived was owing to the administration of the *Calomel, the purgative draughts and purgative enemata repeatedly ordered,* instead of from the Belladonna and Chloroform, *only four doses of which were given on the* 20th (during the 13 days of the attack), after which the spasms returned and the doctor to his Cannab. Indica, Hyoscyamus and Laudanum, purgative draughts and purgative enemata.

In this case I think, for the sake of science, it is a pity such undue prominence was given to a mere temporary *trial* of Belladonna, to the exclusion ofthe manifest benefit derived by the patient from *purgation,* which, it is to be

feared, the doctor lost sight of in his atmosphere of Narcotics, which he avows *were given without the slightest effect.*

ANALYSIS 2.

Traumatic Tetanus—Cure.*

Reported as "treated with Fleming's Tincture of Aconite."

11*th August.*—Patient in tetanus.

Ordered: *a castor oil and turpentine enema,* and liniment of opium, belladonna, aconite and oil.

Bowels moved. Commenced Tinct. of Aconite ♏ ii. every hour, dose increased daily while given, time of administration extended to every second hour.

From the *second* to *the tenth day spasm continued and increased in force, spite the constant administration of this powerful drug.*

On the 2nd day ordered a *purgative enema* h. s.

3*rd day.—Constipation.*

Ordered Calomel gr. ii. and Ol. Ricini ℥. Terebinth. pro haust.

8*th day.*—Liq. Opii Sed. ℥ Sp. Ammon. Aromat. added to the Aconite.

Patient very ill; had taken at 10 P. M. ♏ xlii. and drops 80 of Aconite during the day.

Opium given to induce sleep, in variable doses, with the Aconite.

10*th day.—Constipation.*

Ordered Croton oil ♏ iii. now.

Noon—Still costive, ordered *Cathartic enema* with *turpentine directly* and repeated in half an hour, if necessary.

9 P. M.—Is now asleep, reposing tranquilly. No report is made as to whether the purgative relieved the boy.

11*th day.*—Passed a fair night. *Constipation.*

9 A. M.—Ordered an enema, to be repeated if required.

1 P. M.—*Bowels open*; 5½ P. M. *doing well.*

12*th day.*—Bowels open; has appetite.

13*th day.*—Spasms returned—severe; looks exhausted; *constipated,* skin dry.

Ordered oil and turpentine enema.

* Madras Quart. Jour., Vol. II., p. 86. Case by Dr. Smith of Hyderabad.

14*th day.*—*Bowels freely open*; passed a good night; spasms slight.

Ordered an enema h. s.

15*th day.*—Slept well; no report as to state of bowels.

16*th day.*—Bowels open; spasms slight; skin moist.

17*th day.*—*Constipated.* Had several smart and rapid spasms.

Ordered an enema.

4 P. M.—*Constipated,* feels uncomfortable.

Ordered enema, repeat if necessary.

18*th day.*—Restless till midnight; had several smart spasms. Took laudanum and sal volatile.

Ordered Pul. Jalapæ co. gr. xxxv.

Calomel gr. v. in pul. s. s. An enema at 10 P. M.

19*th day.*—No aconite yesterday; bowels not relieved by the medicines; *a dose* of *epsom salts* ordered, "and the action of the bowels solicited by repeated enemata; after which they acted freely; slept well; pulse 80, weak; no spasms."

20*th day.*—*Is much better;* "all traces of tetanus rapidly disappearing."

25*th.*—Went home well.

REMARKS.

Now, to a boy Æt. 10½, the enormous quantity of ℥ i. ♏ xii. ⅔ of Fleming's Tinct. of Aconite were administered during these 17 days, evidently with no good effect on the tetanus. Added to this he took opium; and a liniment of opium, belladonna, and aconite (drugs of different physiological action) was used; but we observe, on analysing the case, that, *every time attention was directed to the bowels, and the alimentary canal was not well acted on,* the spasm returned and increased in spite of the aconite; but that after each evacuation the state of the boy improved, and after the bowels had been freely opened by epsom salts and repeated enemata, the boy convalesced.

To which, then, shall we attribute the restoration to health? to the action of the purgative upon the inflamed cerebro-spinal system through the alimentary canal, as this case indubitably proves was done, or to the doubtful influence of a dangerous drug like aconite, which really appears in Dr. Smith's case to have had little or no beneficial effect whatever on the disease? Why was laudanum given to in-

duce sleep? Had the aconite arrested the tetanic action sleep would have ensued. When the congested or inflamed condition of the seat of the disease was arrested by the repeated exhibition of cathartics and purgative enemata, sleep followed, "tired nature" was restored, the appetite returned, and the boy was cured.

ANALYSIS 3.

Idiopathic Tetanus; failure of Narcotics and Sedatives; "treatment by stimulation;" cure.*

This case extended *over about two months.*

16*th November* 1855.—Patient in tetanus. *Constipation;* no purgative ordered.

Took Opium, Cannabis Indica, and Assafætida.

18*th.*—*Constipation.* Ordered Ol. Ricini ʒiss. s.s.

19*th.*—*Constipation.* Ol. Ricini ʒi. Ol. Tiglii. gut. ii. s.s.

20*th.*—"Severity of spasms increasing"—no rest, no sleep, chloroform tried; it did no good.

23*rd.*—"Bowels being confined since purgative dose operated on the 20th."

℞. Ol. Tiglii. gutt. ii.
Ol. Ricini ʒ ii.

24*th.*—*Constipation.* Repeat purge gutt. iii. of Ol. Tiglii.

Valerian now substituted for Assafætida.

25*th.*—*Constipation.*—Patient uneasy.

Ordered an oil and turpentine enema. Worms in the intestine suspected; none voided.

29*th.*—No improvement of any kind. Periodic exacerbation noticed in spasms: ordered *three grains* of aloes *four times a day.* No note made as to why it was ordered, or as to its effect.

Quinine gr. ii. ter die, prescribed with wine, and continued to termination and cure.

5*th December.*—Bowels open naturally daily.

REMARKS.

There is another instance, beyond dispute, of the uselessness and harm of sedatives administered in tetanic cases with the view of arresting *muscular action*—a symptom—instead of striking at the *fons et origo mali* of the disease.

* Med. Quar. Journ. Vol. II., p. 401. Case by Dr. Donaldson.

So long as the persistent constipation continued the disease became worse. The purgatives, enemata, and *twelve grains of aloes* should have produced some effect, which is not recorded; but it is rather curious to see that after the enemata and aloes were exhibited, the patient began to convalesce under the quinine and wine—the very best method of treatment in *chronic cases which assume a periodic type.* After such a combination of treatment can such a case be considered as one cured by stimuli and tonics?

Subjugation and eradication require some distinction. In this case it would appear that the disease was *subdued* by the purgation, its last elements (for the disease was very chronic for tetanus, and periodic) were eradicated by the antiperiodic, antiseptic weapon, quinine.

ANALYSIS 4.

Idiopathic Tetanus, treated by Stimulants and Tonics: cure.*

7th June 1862.—In tetanus, "*A smart purgative draught was given,*" not operating, *an enema* of *turpentine was ordered. Bowels well moved, hard lumps came away in stool: "all the symptoms appeared much relieved after this.*" Patient could now open his mouth, and show his tongue, which was *white and covered with red points* (chylopoietic disorder) *and the abdomen became less tense:* ordered Quinine gr. i., Brandy ℥ ss. every 3 hours.

8th.—Vespere: a liniment of Belladonna and Fleming's Tinct. of Aconite was rubbed into sternum, and *the spine was sponged with cold evaporating lotions:* relief followed.

10th.—Severe spasm; *ceased after the operation of a dose of oil and turpentine, after which he had no spasm* for ten hours.

12th.—Spasms at night.

Ordered a purgative turpentine enema.

13th.—Enema acted freely.

14th.—No spasm till 3 P. M.: repeat the enema.

17th.—No spasm since last report. "Bowels kept freely open by enemata containing turpentine, assisted by hot fomentations to abdomen."

20th.—Bowels regular. Taking the tonic.

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* Madras Quarterly Journal, Vol. V, p. 429. Case by Dr. Busteed.

REMARKS.

I would beg to ask, can this line of treatment of an acute attack of tetanus be called *tonic* and *stimulant?* If so, then the late celebrated Dr. Hamilton, of purgative fame, was the most *stimulant* physician on record. Dr. Busteed saw the ill-conditioned state of the alimentary canal when he noted the *tongue*, which was doubtless indicative of the condition of the whole gastro-intestinal mucous-membrane; the deranged nervous state being induced and kept up by the disorder of the viscera, and the vitiated fluids consequent thereon.

Mr. Busteed acted upon the deranged cerebro-spinal system through the proper channel, and the use of the *cold sponging to the spine* was, unquestionably, a most judicious antiphlogistic adjunct. As no disease produces more rapid waste of tissue and exhaustion, the exhibition of quinine and brandy, after and during the action of the purgatives was evidently, according to the nature of the case, both justifiable and called for.

In my humble opinion there is error in publishing the case as one cured by *stimuli and tonics*, for on referring back we find the spasms arrested each time the bowels were well acted on, and this Mr. Busteed did by repeated enemata to the manifest cure of his patient.

He purged away offending accumulations and poisoned humours, and thereby promptly subdued the conjestion, irritation, or inflammation of the nervous ganglia, and arrested the disturbed condition of medulla oblongata and spinal cord.

The persistent tendency to *constipation* is marked; the relief obtained from free purgation is equally marked.

ANALYSIS 5.

Traumatic Tetanus: Antiphlogistics alone; cure.

25*th Oct.* 1859.—Civil Hospital, Dowlaishweram. Lacerated wound of foot.

17*th November.*—Marked trismus supervened. Bowels reported open. Wound looking dry.

Hab. Emp. Lyttæ to back of neck. Haust. Purgant. ℥ iii. s. s.

Hot sedative, turpentine poultice to the wound, ter die.

18*th.*—Bowels well open; somewhat better; contraction of muscles of throat less; pain diminished. Cannot open mouth more than yesterday.

Wound discharging more freely.

Ordered blister to be kept open. Repeat Purge bis die.

19*th.*—Bowels well open; slept all night; has no pains in neck or jaw, spasm less; can open mouth better; tongue white, edges and tip red; wound discharging freely.

Repeat purge. Blister to be kept open.

℞. Mist. Alkalinæ Anodyn. ʒ i. ter die.

22*nd.*—Spasm disappearing gradually. Slept well. Bowels open. Cont. omnia.

26*th.*—Since last report all symptoms of tetanus have disappeared.

30*th.*—Well: discharged.

REMARKS.

In this case trismus appeared twenty-three days after the receipt of the wound. He was a poor, ill-fed, badly-housed, hard-working cooley. The season was cold, damp, and foggy; the lacerated wound severe, the healing process interrupted, yet by local depletion and purgation the disease was arrested.

When the patient could show his tongue the irritated condition of the alimentary canal was evinced; and then an anodyne alkaline mixture was given, while the hepatic and other functions were acted upon by the salts, aloes, and senna draught every morning, and thus the irritation set up in the spinal system was removed.

Analysis 6.

Traumatic Tetanus; Purgatives and *Sedatives;* death.

31*st December* 1861.—Civil Hospital, Dowlaishweram. A weakly cooley girl, Æt. 17, admitted with a severe lacerated wound on dorsum of right foot.

13*th January* 1862.—Pains in neck and jaws, and difficulty of swallowing complained of.

14*th.*—Mouth nearly closed—well marked trismus; bowels *constipated.*

Ordered Calomel gr. x. s. s. Haust. Purgant. ʒ iii. to be

taken in 4 hours. Spine to be rubbed with chloroform; turpentine poultice to wound, which is dry and irritable.

15*th.*—Bowels well open; no sleep.

℞ Calomel gr. ii. Pulv. Opii. gr. $\frac{1}{6}$ 2ndis horis.
Mist Purgant ʒ ii. ter die.
Cont. Alia.

16*th.*—Worse; the least noise—a ray of light, the least disturbance induces severe opisthotonos; jaw cannot be moved more than the eighth of an inch; skin dry; bowels open freely.

Omit Calomel.

℞ Tinct. Hyocy. ♏ xl. Cannab. Ind. ♏ xx, tertiis horis.

17*th.*—Spasms general and severe every half hour; bowels well open.

Cont. Haust. Sed. *Om. Hor.*

18*th.*—Same in all respects, *no sleep.*

19*th.*—Constant spasms; attempts to swallow fluids induce severe spasm and frothing at the mouth. A draught of air, a noise, a touch brings on spasm; is constantly hawking; no sleep; bowels *constipated.*

Ordered a turpentine enema directly and to be repeated at 3 P. M.

Vespere.—Enema produced large evacuation, and spasms decreased; irritability of the surface lessened; can open mouth more. Cont. Med.

28*th.*—No sleep; spasms frequent and severe; obstinately refuses to swallow anything for fear of inducing spasm; bowels well open.

Ordered three turpentine enemata during the day.

21*st.*—Enemata caused three offensive watery stools between which *she vomited a large lumbricoid worm and passed a second large one in stool;* after which she slept well; the spasms became less; she could open mouth an inch wide; tongue pale, dry, rough; obstinately refuses to swallow any thing; appears very exhausted and haggard.

To have wine, beef tea, and arrowroot enemata frequently.

Cont. Haust. Sed.

22*nd.*—No sleep; constant, though not severe spasms. Vespere: died exhausted.

REMARKS.

In this case, which closely simulated hydrophobia, the

sedatives proved useless; and the general antiphlogistics although evidently of some good, were inadequate to the subjugation of the spinal derangement.

The presence of large worms, which probably assisted in keeping up the disease, could not be calculated upon, and I can only look upon their presence as a coincidence. I am convinced the spinal irritation should have been subdued by *local*, as well as general antiphlogistics; *leeches to the spine, blistering, or cold*, assisted by purgation and the turpentine enemata, would probably have saved this poor girl, and I erred, I fear, in not endeavouring to arrest the spinal mischief by one or more local measures.

Analysis 7.

Traumatic Tetanus; treated by leeches, blisters, and cathartics: cure.*

In this very interesting case I find M. Cruveilhier had employed *opium* on the *2nd May* unsuccessfully. He gave 6 grains in 12 hours, it produced *no sleep, no cessation of spasm.* Twelve leeches were then applied to the neck, *after which the patient slept for the first time during eight days.*

The next day twelve more leeches were applied to the dorsal region, which again gave further relief.

The next day—*4th May*—he appeared dying; symptoms resembled hydrophobia. "*Convinced,*" says this great Pathologist and Physiologist, "*that the cerebro-spinal system was the seat of the disease, I determined to increase the secretions from the alimentary canal, over which most of the ganglia preside. I prescribed four drastic boluses composed of gamboge, aloes, scammony, calomel; six grains of each in a bolus.*"

Next day.—"Very perceptible amelioration." M. Cruveilhier also combined a physiological experiment. He thought the constant involuntary contraction of the *diaphragm* kept up, by association, convulsive contraction of the spinal expiratory muscles. He caused the patient to control the spasmodic action of this muscle by regular and deep inspirations (as we sometimes do when troubled with distressing hiccough, and stop it) and he considered much benefit resulted.

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* Lancet 1823-24, Vol. II., p. 225, from Revue Medicale. Case by M. Cruveilhier.

8th.—"Manifestly better. Convulsions rare; drastic bolus every five hours; very copious alvine evacuations.

20th.—Reported "quite convalescent."

REMARKS.

Herein we observe that M. Cruveilhier estimated the condition of the cerebro-spinal and ganglionic derangement, and of whatever value his physiological experiment on the spasmodic action of the diaphragm and spinal muscles of expiration proved, we cannot fail to be struck by the effect of the *local* depletion, for after the leeches were applied to the neck the patient *slept for the first time during eight days!*

M. Cruveilhier arrested the tetanic state of the nervous centres, and completed the cure by removing whatever spinal meningeal or nervous irritation and congestion remained by acting upon the seat of the disease through the intestinal system of capillaries by means of repeated *drastic purgatives*, exactly as we find also advised by Abernethy, to which I shall refer hereafter. Through the combination of the *local and general* antiphlogistic plan of treatment alone can we ascribe the success, for it appears that even after the good effects of the local blood-letting the patient might have died, for on the 4th May he appeared dying, and the symptoms resembled hydrophobia; M. Cruveilhier acted briskly on the alimentary canal, induced copious alvine evacuations, and the disease vanished.

ANALYSIS 8.

Traumautic Tetanus; Antiphlogistics: Cure.

Corporal McLean admitted into Military Hospital, Dowlaishweram, 24th Nov. 1862. Gun-shot wound of severe nature in left hand, caused by bursting of his rifle seventy miles from camp. Conveyed to Head Quarters down the river Godavery in an open boat. Two days on the river; days hot, mornings and nights cold, damp. Wound fetid, sloughy, bones shattered, tendons and nerves torn and hanging about. Had consumed much brandy; had been a very careless liver. I amputated the middle finger, and ragged portion of the wound from the wrist-joint; which had been partly blown away; ring and little finger saved. *Bowels constipated for three days;* thirst great; pulse 120, full. Ordered purgative enema; effervescent salines. Morph. gr. ½ h. s.

25*th.*—No sleep. 7 A. M., severe tetanic spasm of diaphragm and thoracic muscles, abdominal muscles hard; cramps in legs. Said he was dying.

8 A. M.—Return of spasm in greater severity. Risus sardonicus setting in, face bedewed with cold sweat, body drawn backwards; diaphragm and thoracic muscles much affected; breathing almost arrested; intense heat and dryness of throat, and thirst; pulse intermittent, nearly imperceptible during spasm.

Ordered calomel gr. x. s. s.; repeat in an hour. Leeches viii. to occiput, cupping along the cervical and dorsal portions of the spine to xvi. oz., *to be followed by a blister.*

Blister applied to the *throat;* sinapism to the chest and stomach; hot bottles to the feet; and a turpentine purgative enema s. inj. Enema caused a very copious and offensive evacuation from the bowels three times.

10 A M.—Since blisters have risen, heat of throat, hawking, and thirst gone; every symptom of spasm now vanished; respiration easy; pulse 120, full; feels inclined to sleep; wound looking as well as can be expected.

Is dressed with hot charcoal, turpentine poultice.

Vespere.—No return of tetanus; bowels acting freely, stools liquid—very offensive.

Ordered frequent draughts of beef-tea; and Tinct. Opii. ℥ xl. h. s.

26*th.*—No return of spasm; bowels freely open; blisters discharging; wound suppurating freely.

6*th December.*—No sign of returning tetanus. Has suffered from severe erysipelatous inflammation of the arm; otherwise doing as well as could be expected.

REMARKS.

I think it will be seen that the tetanus which had developed and manifested itself in such severity was promptly arrested by the local and general antiphlogistics I employed.

He was a strong man, but had abused his powers by hard living; his constitution was impaired; he was exposed in an open boat day and night in a miasmatous atmosphere; he drank 12 oz. of brandy each day; and, altogether, when I operated upon him, was in as bad a state for overcoming constitutional disorder, as any man could be. Whatever stage of derangement the capillaries and nerve cells of the spinal

cord were in, there can be no doubt of the good effects of blood letting and blistering, with quick purgation. Every organ supplied by nerves arising from the medulla oblongata and cord proclaimed this: thirst, intense heat and pain in œsophagus and larynx, the risus, spasm of the diaphragm and thoracic muscles, and, as a reflex consequence, congestion of the lungs, heart, rachidian veins and meninges of the cord, vanished.

Had I permitted constipation to have continued, while addressing sedative remedies to the reduction of one symptom—spasm, I think it is probable that the tetanus would have been kept up, and hourly increased in intensity, by the disordered state of the large sympathetic ganglia.

Offending matter lodged in the alimentary canal, and vitiated fluids circulating through every viscus, will not only produce cerebro-spinal and ganglionic disorder, but will, unless removed, perpetuate it; and a constant result of such nervous derangement is the reflex effect upon these organs so invariably noticed—*constipation.* Are narcotics, in virtue of their individual properties, calculated to remove these states of the system? If they are, why are they not given *uncombined, solely and wholly;* if they are not, why are they given at all?

The harmless, old familiar purgative which so cleanses the *primæ viæ,* unloads the over-burdened vessels of the viscera of their pent up, vitiated, fiery (carbonized) contents, and brings the needed calm and restoring "balmy sleep," is too often displaced from the eminent rank it deserves, by the dangerous dazzle surrounding a potent poison of ever doubtful efficacy, in this and kindred diseases.

We bestow the palm upon the doubtful rival because we have employed it, while humbler agents were silently working the good, which, peradventure, we have thought effected by the narcotic.

I could adduce numbers of other cases from the pages of our current literature, if further proofs were needed, to show the uselessness of sedatives and narcotics, and the value derivable from a purely antiphlogistic plan of treatment; but it would, I think, only needlessly extend this paper.

From the cases brought forward, and from what I shall presently observe, I believe it will be seen that it is better

to depend upon *local* antiphlogistics—leeches, cupping, blisters, and cold affusions, ice or cold evaporating lotions applied to the occiput and first portions of the spine—aided by brisk purgation and purgative enemata, than to rely upon aconite, belladonna, and other dangerous medicines, the effects of which, in this disease, are at least doubtful if not decidedly injurious.

In traumatic tetanus amputation of the limb cannot be recommended, it has often hastened the fatal result.* Baron Larrey and Sir J. MacGrigor found amputation next to useless; death usually followed.

Mr. Abernethy observed, "alcohol will not fuddle a tetanic patient; *opium will not make him sleep;* mercury will not salivate him." He is very unsusceptible of the excitement of the most powerful medicines; what will produce a most considerable effect on others will not in the slightest degree affect him.† He again remarks, "I am convinced that in tetanus it is a most material point to operate on the brain, through the medium of the digestive organs; producing secretions from the alimentary canal has a more beneficial effect than any other means we can employ for the alleviation and cure of tetanus." With the first part of this sentence I cordially agree, but I believe we ought to produce a simultaneous revulsion from the inflamed *seat* of the disease by *local* depletion, or blisters, or *cold.*

When we consider the nature of the disease and the pathological changes it induces in the cerebro-spinal system, and the reflected effect of this change on the viscera, I think it will be admitted that our course of treatment should be one of a prompt and steady antiphlogistic kind.

If symptoms of surgical fever be present before and during the attack, leeches or cupping at the nape of the neck should be ordered, to be followed by a blister, which should be kept open by blue ointment. If *ice* be procurable, it should be applied to the occiput and spine; if not, *cold water affusion,* at intervals of three or four hours, will do good. In milder cases in youths, a blister to the neck and cold evaporating lotion may suffice.

While the leeching or cupping is progressing we should administer a calomel, jalap, and honey purge, and repeat

* Vide Sir A. Cooper's Surgical Essays, part 2, page 190.

† Lectures on Anatomy, Surgery, &c. 3rd Edn., page 21.

this at an early hour; and to do this Abernethy's plan may be tried:—"Watch an opportunity when he opens his mouth, put a gag into it, whip the medicine over the tip of the tongue, and then take out the gag. I have purged patients in this way when I knew not how I should accomplish it in any other manner. When the calomel and jalap have been administered till they act on the bowels, they will at last generally bring away such stuff as people who have never seen it can have little idea of. I remember, on one occasion, asking an old nurse what sort of evacuations had come from a tetanic patient, who had passed a week without having any, "Lord, Sir, they are not stools—they are sloughs!"*

An enema of salts, aloes, turpentine and gruel should be administered at once, if the bowels be constipated and the symptoms severe, and repeated each morning. This generally gives great and speedy relief, and if worms be present they will be expelled.

A diminution of the spasms is *always* witnessed after the bowels are freely moved.

On the use of cold, as an antiphlogistic and *true sedative* of a very high order, a few words are necessary.

Cold affusion was considered by Hippocrates, as the most effectual remedy in *idiopathic* tetanus. If effectual in idiopathic tetanus, why not in *traumatic* tetanus, for the nature of the disease is the same?

Dr. Wright, of Jamaica, published† six cases of tetanus successfully treated by cold affusion, and he says, "since I have used this method, I never failed in one instance to effect a cure; and that in a shorter time than by any other method proposed."

In the same volume at page 158 is a case recorded by Messrs. Drummond and Bewcastle, Jamaica, in which a Negro, Æt. 40, had suffered from the "joint-evil" (probably leprosy) which had destroyed his fingers and toes. The disease "seized the metatarsus with most excruciating pains." The weather was bad, his hut out of repair, and in "*the midst of woods and plantain walks*": in miasm.

28*th March.*—He had violent tetanus, and these gentlemen "gave directions that he should be well soused with the

* Op. cit., page 23.

† London Med. Obs. and Inquiries, Vol. VI. The use of cold bathing in the Locked Jaw, &c., by W. Wright, M.D., F.R.S., Read Feb. 8, 1779.

coldest water that could be procured, every four hours;" blue ointment was rubbed in the spine, and oily glysters injected.

After each *sousing*, he perspired much, and *slept*, and on the third day could open his mouth and swallow; on the 6th day he was free from tetanus. He had taken 90 grains of solid opium in five days! what power could this drug have had in this case, to be required in such enormous quantities?

Dr. Currie of Liverpool, advocated cold affusion for the cure of tetanus.*

Sir J. MacGrigor relates a case of a wounded guardsman who suffered from tetanus when the force was marching through Gallicia. He was placed upon a bullock-cart, was drenched with rain, and exposed to *extreme cold* from 6 A.M. until 10 P.M., when he was found nearly dead from the cold, but free from the tetanus.

The paralysing antiphlogistic and sedative effects of extreme cold upon the circulation and muscles should not be forgotten.

It is scarcely necessary to advert to the beneficial effects of the treatment of visible inflammation after severe injuries, by the continued application of cold—ice, cold lotions, cold water. If we remember how often we have produced comfort and rest, and banished pain from an inflamed part *by the local abstraction of heat;* of what value cold lotions *constantly* applied to the head of one suffering from fever or delirium prove; or the sudden benefit of cold affusion to the head of one suffering from toxæmia and cerebral conjestion, we shall be at no loss to understand how important an adjunct cold affusion may prove in the treatment of tetanus in which the meninges and substance of the medulla oblongata and cord are irritated, conjested, or inflamed.

Dr. Carpenter† applied ice to the spine in seventeen cases of tetanus, and out of this number, *sixteen* cases recovered. This is very encouraging.

Notwithstanding, that I believe the application of ice, the affusion of cold water, and cold lotions to the occiput and spine to be of the greatest benefit in this disease, I would recommend *cold*, in whatever form it can be applied, only to

* "Med. Rep. On the effects of water, cold and warm, as a remedy in fever and other diseases." Liverpool, 1798.

† New York Journal of Med. January, 1860.

be used as *one* of the great antiphlogistics at our command; not solely to the neglect of leeching, blistering, and free purgation.

In every case we must support the patient by enemata of beef-tea and port wine, sago and arrowroot, as the disease is one which induces rapid wasting and exhaustion. A full dose of laudanum may be given at bed time, with manifest advantage, to induce sleep, *after* the bowels have been freely acted on by purgation, and the spinal irritation and congestion have been moderated or removed by the means recommended. When the disease becomes chronic, removal to another climate, with Iodide of Potassium Quinine, Wine, and *cold affusion* daily to the head and neck, every morning and *evening* should be advised.

No plan of treatment can ever be *universally* successful in any disease, much less in one which, in its attack, involves those parts of the nervous system upon which *life alone depends;* but I do believe greater success will crown our efforts in the treatment of tetanus if we follow the antiphlogistic method, to *the total disregard of narcotics,* than any *new* plans that have been of late years recommended.

I have been induced to bring this subject forward in its present form, not with any desire to criticise the cases recorded by brother medical officers, but solely as a labourer in the fields of science endeavouring to find out for myself, and for the benefit of suffering humanity, a reason for the comparative excessive mortality from this disease, and to humbly endeavour to point out, if possible, a means of obviating it.

Whether I have performed the task I set myself or not will be proved, I trust, by fellow-workers more capable than myself, and who have greater opportunities of testing the value of the facts brought forward, by their extensive clinical observation; and that other medical officers will do so is my most earnest hope.

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*Note on the Physiological action of Aconite; Belladonna; Woorari (Urari): Narcotics used for the cure of tetanus.**

Aconite.—Produces heat, tingling, numbness in the extremities; frequent attempts to swallow; spasmodic move-

* Vide Mat. Medica, Pereira: Articles, Aconite, Belladonna, Strychnia.

ments ; vomiting ; *does not induce sleep ;* has caused stiffness of the muscles when put in action ; blindness ; *contracted* pupils; livid face; rigidity of jaws and fauces; breathing short, imperfect, difficult ; convulsions ; oppression at præcordia ; intermittent action of the heart ; asphyxia.

Topically.—a benumber of *pain* in the nerves ; excellent in *neuralgia.*

BELLADONNA.—Produces dryness of the mouth and throat ; thirst ; obscurity of vision; blindness; suffused eyes; numbness; giddiness—a state closely resembling intoxication from alcohol. There is difficulty of swallowing ; constriction of the throat; redness of face; nausea; vomiting; vacant smile ; gay delirium ; syncope ; aphonia ; sometimes convulsions ; and *dilated* pupil.

How does belladonna cause contraction of the iris—i. e., *dilated* pupil ?

It differs from aconite in affecting those portions of the nervous centres which are the seat of the *intellect and sensibility.*

Alcohol affects the seat of intellect and sensibility *and* motive powers.

WOORARI (URARI), (obtained from the strychnos-toxifera) produces rapid paralysis, convulsions, and asphyxia.

These medicines are eminently dangerous ; they differ in action, and physiologists have not even determined what their real action may be.

If physiological experiments are to be relied on, clinical observation trusted, and pathological anatomy believed, then I think it will be admitted that we ought to expect no good from the use of these agents in such a disease as tetanus.

Narcotics may deaden a pain—a symptom of disease—but in tetanus something has disturbed the static equilibrium of the nervous force at its fountain head, and *that something* must be removed before the effects of this disturbance—muscular pain and spasm—can be expected to vanish.

Art. VII.—*Cases of Delirium Tremens, with Observations.* By Surgeon Major A. Blacklock, Physician, General Hospital, and Professor of Medicine, &c. Madras Medical College.

Case I.—*Delirium Tremens with Paralysis.—Recovery—Subsequent Epilepsy.*

———— Æt. 35. Employment sedentary; residence in India 15 years; temperament nervo-sanguine; habits intemperate.

12*th February*, afternoon, admitted, complaining of nervous feelings. About eighteen months or two years ago began to experience numbness in his right side; then the right fore-arm and hand became numb; next, the left side over the stomach. The numbness extended to left arm and both feet; and both arms became affected with tingling sensations. Next, cramps came in arms and legs at times, and the legs were easily fatigued in walking. During the last few months he has had constant sense of fatigue in legs, whether walking or resting. His memory has been confused and imperfect, and vision much obscured by floating specks. During last few weeks he has also had giddiness occasionally, and has vomited about 5 o'clock each morning. Thinks he vomited bile. Has had a month's leave lately and been under medical treatment, chiefly purgative. He says he cannot walk; but he cannot even stand. His face is plump, eyes prominent and dim, both pupils rather dilated. Irides slow in moving; vision very imperfect, so much so that he cannot distinguish a face from a hat. Eyelids wrinkled; frontal headache occasionally, especially after vomiting; skin temperate, thin; and, like the muscles, soft, flabby and badly nourished. Hands tremulous. Feels distinctly when feet are touched; but touching his hands imparts a sensation as if they were touched through a glove. Has pricking, shooting pains in hands and fore-arms; and there is greatest numbness in flexor sides. Pulse 130, soft, very weak; liver normal to percussion; tongue large and soft, rough and pale. It was afterwards ascertained that he had been about three months in his own house, most part of the time in bed,

taking little food, drinking various stimulants in excess and smoking cheroots almost constantly.

℞. Tinct. Ferri Sesquichlorid ♏ xx.
Phosph. Calcis ʒiss.
Syrup. ʒ iss. *m.* thrice a day.
Sp. diet—Bread 8 ounces;
Tea 1 pint.

13*th.*—Slept a short time during the night. Numbness the same; pulse 92, steady; tongue smaller, tremulous, not rough; no headache; all objects appear double; eyes brighter; ideas confused; hands shakey.

Repeat medicine thrice a day.

Add eggs No. 3, butter 2 oz., milk 2 pts., chicken fried No. 1 to the diet; and give egg flip* 1 pt. after each meal.

14*th.*—No change.

Continue medicine and diet, with a chop for breakfast.

5. P. M.—Fussy, fidgetty and delirious. Fancies there is a corpse near him. Pulse 104; sees better; tongue pale, tremulous; urine pale, scanty; no stool.

Repeat egg flip at 5, 7 and 9 P. M.

15*th.*—Had a pretty good night's rest. Pulse 93 to 96; two stools during the night, normal in appearance; urine scanty, of deep red color; vision still dim; features vacant; numbness nearly as before.

Continue diet, repeat egg flip,
with Phosph. Calcis ʒss. in each pint, thrice to day.

5 P. M.—Quiet all day, but mind wandering. Pulse 103, weak.

Repeat egg flip at 5, 7, and 9 P. M.

16*th.*—Slept well most part of the night. Pulse 96; tongue less tremulous, smaller, with teeth marks on edges and very anemic; vision clearer; urine in fair quantity, pale; bowels open; mind calm; says the numbness is less now.

Continue as before.

17*th.*—Had a comfortable night's rest; looks refreshed and livelier, numbness diminishing; cannot stand; urine containing more animal matter; vision more distinct; tongue pale, still tremulous and indented at edges; stools half formed.

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* Prepared with eggs No. 4; sugar 3 oz., salt 3 i., beer 1 pint.

Pulse 96, has an excellent appetite, and says he is far better now than he has been for a long time.

Continue as before and give bread 8 oz., potatoes 8 oz. in addition.

On the 20th February his bowels were much confined and he became feverish, and he required purgatives and sudorifices. But on the 27th February he was so much improved in every respect that he was able to walk a little in the verandah while supported by two servants. From that time he improved very slowly, but steadily. On 12th September of same year, he was able to walk slowly by help of a stick; he had a pretty fair memory, even for recent occurrences, and wrote well and fluently. On that date he was discharged and soon after returned to duty. After about three months steady work, during which he became very stout, he had an epileptoid fit of brief duration. His memory then began to fail very much, and his limbs again became feeble. The brain softening which had most probably commenced at the time he was admitted into hospital, and which was arrested by rest and a complete reform in his way of living, was evidently now proceeding unchecked, and he was compelled to relinquish work and place himself under treatment.

The following case is in many respects similar to the preceding, and might, in all probability, have been, like it, much delayed in its progress, had the man been brought under treatment at an earlier period.

Case II.—*Delirium Tremens with Paralysis in a person holding a situation of much work and responsibility—Fatal—Extensive Hepatic and Renal Disease.*

Æt. 31; service 8 years; temperament sanguine.

10*th March.*—Admitted into the General Hospital at 4½ P. M. without any statement of his case, but in charge of a 2nd Dresser, who says the man was well yesterday on the line of march near Madras, and was reported sick this morning. The man himself says he felt giddy and shaky when he got up, and that he became blind at 7 A. M., when getting into the train. Is now quite blind; eyelids open, pupils much dilated; conjunctivæ normal; no squinting; hears well; speaks quite rationally and his memory is excellent; skin cool and moist all over. No pain in head or any other part, except when he tries to stand, and then he has pain in legs and can-

not stand, although he can move his limbs freely while on his cot. Tongue white, with red tip; bowels moved just after he came to the hospital, stools scanty and fœtid; pulse 84, soft, of fair strength; heart's sounds and impulse so feeble that they can scarcely be made out by stethescope. Hands tremulous.

℞ Calomel gr. x.
Pulv. Jalap. Co. ʒ i.
Pulv: Scammon. gr. xv. *m.*
now; and at 6½ P. M.

Give Infus Sennæ ℥iv.
Tinct. Sennæ ʒiii.
Sulph. Mag. ℥ss.
Tinct. Lavand. ʒiss.
Tinct. Gentian Co. ʒiii. *m.*

Chicken pepper-water with the chicken in it at 7½ P. M.
Arrack 1 measure.
Water ℥iii. after purgative.

10*th*, 7½ P. M.—Has just taken his black dose and vomited it. Bowels moved once, stools dark, scanty, exceedingly offensive; can now see pretty well.

℞ Pulv. Jalap. Co. ʒ i.
„ Scammon. gr. xv. *m.* now.
Repeat arrack and water at 9 P. M.

11*th*.—Well purged during night and had little sleep; stools copious, very bilious; sees well, but pupils are still much dilated; looks better; limbs less tremulous; heart's sounds and impulse stronger; pulse 80 to 120, soft, not well filled; tongue white; skin warm and moist; no appetite.

Chicken mulligatawny with Garlic 3 pints per day.
Arrack 1 measure.
Water 3 measures *m.* thrice a day.

5 P. M.—Sees well and can walk, but pupils are still much dilated; skin temperate, very moist; tongue clean; bowels open; pulse 90, pretty steady.

12*th*, 1 A. M.—He became suddenly blind at 10 P. M., and has since been very unruly, rushing about the wards and falling on cots. Has received a small cut on outer side of left patella, I have just had him conveyed to a room and three of his comrades brought and placed over him. He is very clammy and chill and in a state of high nervous excitement, which

he evinces by movements energetic and rapid in spite of his blindness, but he does not shout.

Tr. Opii. gtt. xx.
Ant. Pot. Tart. gr. ¼.
Aqua ℥ ii.
Every 3rd hour.

5 A. M.—Has been rather quiet during the last three hours, but always moving about; sometimes striking his head, accidentally, I think, against the walls; and he has hurt his left knee again by climbing up to the bars of the window. Calls out occasionally for his comrades to open the gate, meaning the door.

Omit the mixture.
Give Infus. of Garlic ℥viii.
Every 3rd hour.

1 P. M.—Moves about slowly and does not attempt to strike; smiles when spoken to; is still blind and pupils dilated; skin clammy but not so wet as last night; pulse quick and weak. Has not rested, takes his medicine willingly, and sometimes a little strong chicken pepper water.

Continue Garlic Infusion and mulligatawny.

4 P. M.—Skin drier; pulse not so quick and weak; is very obedient now, and I have just got him to go to bed; still he cannot see.

Cont. Garlic Infusion and mulligatawny.

8 P. M.—Moves about the room very quietly, groping round the walls and stooping to pick up some imaginary article; speaks in low voice and sometimes makes a sensible remark, but generally talks nonsense; tongue pretty clean; pulse weak and quick; skin damp and warm all over; head cool; pupils half contracted and he cannot see; has not rested since last visit; has just taken good part of a quart of beer, after some persuasion; has had a fair quantity of mulligatawny to-day with a little bread, and has taken his medicine regularly.

Omit medicine.

13*th*, 4½ A. M.—One of his own Regiment orderlies went into the room a few minutes ago and found him sitting against the wall, his head to his right shoulder, dead, cold and stiff; but, as the body of a person dead of such a disease is certain to stiffen immediately, he most likely died only very shortly before the fact was known to his comrade on duty.

Examination of the body at 7½ A. M., *13th March.*

Body muscular; the injury he received on the outer side of left patella on morning of 11th instant is a cut two inches long and only through the integument. Some small bruises on forehead from knocking his head against the wall.

Head.—Scalp not congested; about ʒ i. of clear serum in cavity of arachnoid and a little in the sub-arachnoidean spaces; no opacity of arachnoid; veins of pia-mater, especially the middle meningeal, much distended with blood, and capillaries injected; substance of brain soft and œdematous; cerebral vessels full of thin non-coagulating serous blood; choroid plexuses injected; veins of walls of lateral ventricles distended, and a teaspoonful of clear serum in each ventricle. Cerebellum soft, more so decidedly than the cerebrum, and its vessels distended. No change could be noticed in the optic nerves or their origins to account for the blindness.

Thorax.—No adhesions. Lungs of buff color and much distended by air; not contractile, free from œdema, moderately congested at posterior halves, no serum in pleuræ; about ʒ ss. of serum in pericardium. Right side and base of heart covered with fat; right auricle unusually large and distended with blood; right ventricle normal in size, left auricle normal; left ventricle normal in size, but walls much thickened (concentric hypertrophy); valves healthy; no trace of endocarditis; a patch of old lymph on front of outer surface of left ventricle—1 inch long and ⅓rd inch broad; arch of aorta dilated, puckered, and studded with atheromatous deposits beneath the serous membrane.

Abdomen.—Omentum large and fatty; liver projecting three inches below the cartillages of the ribs, and extending right across the abdomen. The front edge was rounded, the whole very large, and the left lobe six times bulkier than usual. The color was that of dark Port Wine over the front and right lobe, and very dark brown over the rest of the surface. On minute inspection, both hepatic and portal capillaries were found to be injected; and, on making a section, the whole organ was seen to have taken on the nutmeg characters. Its vessels contained much dark fluid blood. Gall bladder full of dark brown bile. Stomach of moderate size and its walls thin. It contained only a little brown fluid, evidently the remains of the beer taken at 8 P. M. The sub-mucous tissue was infiltrated with blood over about two square inches near the cardiac orifice, and the rest of the surface was stud-

ded sparingly with punctiform ecchymotic patches. Very tough mucus was on the surface, and it had a puriform appearance; so that the ecchymosis was most probably the result of inflammatory softening and rupture of the vessels. Large intestines of unusual length, the transverse colon being thrown into folds and situated below the navel, probably pushed down by the liver. The cœcum, with part of ascending colon, was large and distended with air; the rest of the bowel was much contracted and sacculated at intervals of an inch. The large and small intestines had unusually thin coats and were dark from engorgement. Spleen normal; kidneys normal in size, adherent to thin capsules, very dark in color, very tough, and exhibiting only about a fourth of the tubular structure; urinary bladder contracted; muscles dark red. Blood every where thin and fluid.

This case presents several remarkable points. When the man was admitted into the hospital he was in a state of great exhaustion, as indicated by the feebleness of the heart sounds, paralysis of the optic nerves, ciliary branches of the ophthalmic division of the fifth pair, and semi-paralysis of the motor nerves in general, as evidenced by the tremors and loss of muscular co-ordination. The rest of the fifth and also the seventh pair of nerves were most probably affected to some extent, as his face had a peculiarly vacant and silly expression; but of this I could not be a good judge, as I then saw him for the first time. The subsequent progress of the case proved also that the par vagum was also in a very feeble condition. As I had but a very imperfect account of the circumstances which had led to this condition, and the patient was in a very responsible position in which he was not very likely to give way to dissipation, I was obliged to ascribe this paralytic state to hard work, and exposure to heat while on duty, and I therefore at first headed his case Ictus Solis, that being the only Nosological term in our arrangement which could convey even an approximate idea of the case. But I was very far from being satisfied with this diagnosis, as in the course of all my experience and reading, I had never met with a case in which exposure to sun alone, had produced a similar train of nervous symptoms.

As the exhaustion might have been partly caused by the depressing effects of fœtid accumulations in the bowels, I gave him at first smart purgatives and then followed them by

the direct nutritive and stimulating treatment he so much required. Under that treatment he improved decidedly, but the improvement turned out on the evening of the 11th March to have been only a postponement of the malady, which a knowledge of his antecedents would have shewn me was almost sure to overtake him in spite of treatment.

After the appearance of the delirium, I had but faint hope of being of any real service to him, as I knew before it appeared that he was in a state of extreme danger from the feebleness of the heart's sounds and variableness of the pulse, indicating a degree of exhaustion very unusual after so brief an illness; and also a decided loss of elasticity in the larger vessels and valves. Sudden death was at any moment to be expected, and I repeatedly expressed myself to that effect.

With reference to the treatment it was very clear that, as a reasonable and safe allowance of spirits had failed to prevent delirium, any increase, or even the continuance, of that quantity could not be of any decided service for its dissipation. There was a kind and degree of functional derangement, which might be aggravated but could not be remedied by ordinary stimulants. After a brief trial of Grave's remedy the progress of the case convinced me that it would not be safe to continue opium in any form, owing to the risk of epilepsy; and the results of the post-mortem examination, I think, confirm this view. For these reasons it was considered best to treat him by nutritious spiced soup, with a large admixture of garlic, which I have often found to be a very safe and good stimulant in impending or present delirium tremens. Of its use I shall speak hereafter.

The necropsy, however, brought to view an amount of long standing organic disease, which proved that prolongation of life was almost impossible under any kind of treatment. Had the man survived this attack, he would, after a few weeks, most probably have died from hematemesis, to which he was disposed by the enormous distension of the liver; and hemorrhage had been daily becoming more imminent owing to the softened condition of the gastric capillaries, and the greater embarrassment of the hepatic circulation, occasioned by the recent commencement of the nutmeg metamorphosis of the parenchyma. It is known that the central lobular hepatic vein redness, and the inter lobular or portal vein redness, named by Mr. Kiernan hepatic venous congestion of the

first and second degrees, and such as were present in this case, may exist with a healthy condition of the biliary cells; but, where the tissue has the nutmeg markings, the cells must be affected, as the streaks of dirty white or greyish color are occasioned by morbid development of fat or fibrin, either of which leads to obliteration of cell tissue directly by pressure on the cells themselves and indirectly by pressure on the capillaries. It is, I believe, at this turning point in the pathology of the liver, when hypertrophy has ceased to increase, and atrophy is commencing, that there is the greatest risk of hematemesis, for there is then a superabundance of blood, which, as many of the hepatic capillaries are being closed, must be forced into other and weaker vessels.

This case is another instance added to the number annually occurring in proof of the fact that a man with extensive disease of the liver and kidneys may keep up a good shew of muscle, provided he have sufficient regular open air exercise to induce his skin to supplement or compensate for the deficiency of the renal function. It is worthy of remembrance in medical practice that a good development of the muscles is no proof of the absence of chronic disease of the liver and kidneys, and that even in such strong looking men, it may be very extensive.

Case III.—*Delirium Tremens, fatal—remarkable exudation of blood into the sheath of the aorta.*

——— Æt. 37. Temperament bilio-sanguine; constitution strumous; habit fat and muscular; habits very intemperate.

27*th March.*—Brought to hospital at 4 A. M. in a carriage by a Police Inspector, who found him half an hour before rambling in the streets and quite unable to take care of himself. It appears he has been a hard drinker for several years. Was in this hospital on account of "Delirium Tremens" from 14th to 25th October 1858, and has since been several times in the care of private practitioners on account of the same symptoms. Has been slightly ill during the last two days and had medical attendance in his house, till he made his escape this morning.

6 A. M.—Is on his back, talking in a low voice, sometimes sensibly, when his attention is attracted, and at other times irrationally. Face pale; conjunctivæ pale; pupils moderately

dilated; head all cool but forehead, which is very hot and moist; tongue moderately clean, very red-edged, moist, but covered with viscid secretion; body temperate; liver dulness extends across body, and from one inch below nipple to three below ribs; can move his upper and lower extremities, freely when on his cot, but cannot do more than stand up, even with support; hands tremulous; pulse 156, soft, rather full and jerking, but very weak; heart's sounds tolerably clear and concentrated; respiratory murmur feeble; state of alvine excretions and urine not known; no odour of spirit, but he exales a peculiar acid perspiration.

Ol. Ricini. ℥ ii. now
Chicken mulligatawny, with Garlic, O iii. per day.
Ice to forehead.

1 P. M.—No change; sometimes tries to get off his cot.

6 P. M.—No change; pulse 144, soft, feeble, jerking; bowels moved once freely; stools nearly normal; urine in fair quantity, clear and pale; forehead burning hot; pupils dilated.

28*th* 2½ A. M.—Had a few slight convulsions a few minutes ago; and, before the Apothecary on duty could reach him, he expired. The attendants said that the low muttering delirium and attempts to get off his cot continued till the convulsions came on. He had taken nearly all the food prescribed for him.

7¼ A. M.—Examination of the body 5¼ hours after death.

Body well developed, loaded with fat over chest and abdomen, and exhaling a very acid fœtid odor; usual sugillation over depending parts; muscles rigid; no syphilitic marks anywhere.

Head.—Scalp engorged with dark fluid blood, vessels of dura-mater distended; a small quantity of serum in cavity of arachnoid, and a considerable quantity in subarachnoid spaces; a large patch of opacity on arachnoid on right side of vertex; a small patch of the same kind a little to the outer side over same hemisphere; arachnoid at base also opaque; pia-mater much and uniformly engorged; olfactory nerves much wasted, so that the neurillema appears empty at parts; optic nerves considerably diminished in thickness; substance of brain firm, and the cut vessels more numerous and bleeding more freely than usual; grey matter deficient and pale; lateral ventricles contain scarcely

any serum, their walls and choroid plexuses congested; cerebellum very soft throughout, and its piamater congested.

Chest.—No fluid in pleuræ, no adhesions; lungs rather dark and distended, filling the chest completely, non contractile, much congested at the back, and free from œdema; heart of usual size, on the whole; right side and base thickly covered with fat; auricles normal; wall of right ventricle atrophied, so that it was not more than a line in thickness at any part. Left ventricle rather larger than natural, its substance dark and firm. Aortic valves imperfect; walls of aorta remarkably thin, and the whole of this vessel, so far as examined, from heart to 5th dorsal vertebra, contracted and attenuated. Sheath, throughout that extent, infiltrated with extravasated blood, which was coagulated, and had been injected into the cellular tissue in patches, which could not be washed out. This ecchymotic condition of sheath extended along the innominata and carotid arteries on right side, and for about an inch along subclavian and carotid arteries on left side. No opaque or ecchymotic patches on heart below endo or pericardium. Subsequent more extended examination, shewed that the sanguineous exudation into the aortic cellular investment had occured so low as the origin of the superior mesenteric artery. The ecchymosis was most marked, at the giving off of vessels. There was no corresponding change within the aorta. The exudation must have been from its nutrient vessels.

Abdomen.—Omentum fatty; all the intestines dark. Stomach distended with air of suffocating, acid, fœtid odor. Walls of average thickness; mucous membrane thin, little mucus on its surface, and exhibiting a large amount of ecchymotic points near cardiac orifice. Small intestines normal; large intestines attenuated but healthy; transverse colon rather shorter and lower in position than usual. Liver large, very round edged, very firm and tough, extending from nipple to one inch below costal cartilages and transversely across the whole abdomen. Left lobe unusually large; no red tissue to be seen anywhere in any part of the liver; the entire organ was of one uniform pale buff color; not exhibiting a single acinus and no portal vessel was visible. On the right extremity of right lobe there was a cicatrix about an inch long of a dark red color, most probably the remains of some former apoplectic exudation. Spleen hard, stiff, resisting, and dark purple-red in color, without any trace of normal tissue; kidneys about normal in size, en-

veloped in fat capsules; adherent surface opaque in patches; substance granular in greater part, tough, dark, not containing above a fifth of the ordinary normal tube structure; pelves obliterated, replaced by fat, no calyces; bladder moderately contracted.

Case IV.—*Delirium Tremens with epileptoid seizure. Recovery.*

———— Æt. 30. Temperament nervo-sanguine. Habits intemperate; 6 years in India.

10*th August*, 5¼ P. M.—Came to the quarters of the Physician, General Hospital, in a coach, in charge of a servant, and complained that he was very ill and required medical assistance. He was then vomiting clear fluid with much force, between his sentences, and had ice with him which he had been taking to check nausea after leaving home. He said he had an attack of delirium tremens three weeks ago, and he then tried to drown himself, but had been prevented by a neighbour. Since then he has been drinking continually beer, brandy, eau-de-Cologne, aromatic vinegar—everything, in fact, which could be made to serve as a stimulant; and has, for many days, never tasted food. He gives a very clear account of his doings, and says he is certain he will hurt somebody or harm himself, if not placed under surveillance. He was taken to the hospital, and placed in a separate room. When put in bed, and made a little quiet by talk, he was carefully examined. The vomited matters were clear, watery, and had a strong odor of eau-de-Cologne and lavender. His aspect was haggard and worn; pulse 80, soft, rather full and jerking; skin dry and rather too warm all over; no particular heat about head; tongue clean, of moderate volume; abdomen very full, soft and flabby; epigastrium tender, and bearing marks of former treatment by leeches, and more recently by blisters and sinapisms. Firm pressure on stomach occasions choking sensations and intense nausea followed by vomiting, or rather, attempts at vomiting; feet and ankles slightly œdematous and very tender; bowels moved two days ago, by two grains of calomel and two of colocynth; stools, then, were dark and copious; calls incessantly for water, and says he hopes he may be allowed laudanum.

Sinapism to epigastrium.
No fluid to be given.

8 P. M.—Since 6 P. M. he has been endeavouring to escape from his attendants, but does not attempt violence. Is, at times, very much excited and alarmed, apparently from something he fancies is tormenting him in his stomach; makes much noise, screaming and moaning. Skin cool and dry; pulse small and feeble; tears off his clothes at times; still some irritability of stomach. With much persuasion, he has just been induced to swallow about six ounces of a mixture of beer, eggs, and sugar.

9½ P. M.—Has been quiet and rather stupid since last report; stares wildly about him, and is very slow in putting out his tongue when told to do so, evidently from not understanding what is said; tongue clean, moist; head rather warm but moist; pupils slightly dilated, and sluggish to light; face bloated; feet rather too cool, in spite of flannel socks which were put on when he was admitted; rest of skin warm and moist; pulse 104, soft regular, of fair strength; no more vomiting; heart's sounds loud and clear, accompanied by slight systolic blowing.

To be watched. Sinapisim to feet and ankles.

11*th*.—No sleep; no change of symptoms.

Chicken pepperwater three pints.

5 P. M.—Has just had an epileptoid fit lasting, however, only about five minutes; pulse was almost gone at the wrist, as the fit terminated; heart's action violent; pulse soon returned and became of fair strength, about 80. He could not speak but took ℥ 4 of Port Wine very willingly, though slowly, and swallowed with some difficulty. Sinapisims have been on some time, but have not acted; skin cool all over.

Port Wine ℥ ii., with 2 eggs in it, occasionally during the night.

12*th*, 7 A. M.—No return of fit, although he said early this morning that a fit was coming on; had ℥x. of Port and 10 eggs during the night, was quiet and slept a little towards morning; some copious, almost pure bilious, stools this morning; skin temperate and dry all over; head rather too warm but moist; tongue clean, pale, large, and moist; pulse 108, of fair strength; no abdominal tenderness. Complains of effect of mustard on feet; breath has a strong disagreeable odor of bad spirits; face swollen and pale; is very sensible, enters into conversation, and only wanders a little occasionally.

Cold chicken pepperwater as much as he can drink.

Vespere.—Has been pretty quiet all day and had a little sleep occasionally; has taken two pints of egg flip to-day, but little pepperwater. Vomited slightly once, is inclined to vomit when he sits up; skin temperate. Pulse 96 to 108, soft, of better character than yesterday, having no jerk; a good deal of bilious feculence passed since morning; urine not seen; talks nonsense, craves for brandy.

Continue egg flip and cold pepperwater.

8 P. M.—Has been very quiet since last report and taken some pepperwater. Face less swollen; tongue not so broad; skin dry and temperate all over; pulse 96, of fair strength, soft; speaks sensibly of his contemplated embarkation for Europe, but is wrong as to dates; urine scanty, very red, not enough collected for examination.

Egg flip Oi. now and 12 midnight.

13*th.*—Rested quietly and had some sleep during the night; speaks in high terms of the egg flip he got at night; pulse 84, soft, regular; skin temperate and moist; says his feet are more comfortable now; tongue clean, not so broad; a small quantity of bilious stool during the night; not above a pint of urine in 24 hours, highly albuminous and loaded with epithelium, but free from oil globules and casts; speaks very rationally and desires to have a book to read.

Continue.

Vespere.—Has had a good appetite to-day, and has taken a fair quantity of chops, bread, potatoes, &c. Looks better; skin cool and moist; pulse 96, of fair strength; heart's sounds and impulse normal; a good deal of urine passed since morning; complains that he is becoming near sighted.

Continue.

17*th.*—Quite well.

Discharged.

Case V.—*Delirium Tremens terminating in epileptoid seizure and Coma. Death.*

————— Æt. 30; Temperament sanguine; habit muscular; habits very intemperate.

7*th May.*—Admitted at 3 P. M. suffering from the effects of very free use of spirits during the last week. Is exceedingly nervous, the whole body is tremulous; skin cold and clammy; face much swelled; tongue thickly coated with

a yellowish, pasty, fur, and very tremulous. Pulse small, creeping, soft, weak; says that his bowels were freely opened this morning; feels uneasy about the epigastrium, no vomiting. Replies readily to questions; but, at the same time; it is very evident that his mind is otherwise engaged.

Ol. Ricini ℥ ii. now.
Chicken pepperwater O. iii.
To be watched.

8th.—Oil acted well, stools copious, dark, almost black, bilious; no sleep; still tremulous and says his head is not all right. Fancies he sees and hears people talking about him. Has been very quiet during the night.

Continue chicken pepperwater.

Vespere.—Has been walking about a good deal during the day, and has been observed to be rather odd in his manner, talking to himself and turning up the bed clothes, looking for something. Is still tremulous; skin cold and bathed in perspiration. Forehead cool; face pale; pulse small, slow, creeping; is talkative.

Egg flip. O. i. now, and at 9 and 11 P. M.

9th.—No sleep, always moving about the ward, but very quietly, not so tremulous this morning; says he feels well, but looks wild and excited.

Egg flip thrice.

Vespere.—About 11 A. M. while walking in the verandah, he complained that there were men in the ward teazing, abusing, and accusing him of sundry misdeeds; was very tremulous and excited, speaking in a loud tone and incoherently. He was directed to be put into a room by himself and to be constantly watched. Is reported to have been walking about constantly since he was put into the room, Can, with difficulty, be persuaded to take his pepperwater; took his flip, however, readily; skin is not cold as it was and not so drenched in perspiration. Eyes staring, pupils dilated. Forehead cool; replies readiiy but incoherently.

Repeat flip to night.

10th.—No sleep; left his room several times, and went into the next one in which was an officer, rousing him, to take notice, as he said, of what was going on in his own apartment. Even now will not remain in his own room;

attempts to strike the servant, and struck him once. Pulse small, feeble, slow; heart very feeble, and he is evidently very much exhausted, but will not go to bed. One scanty stool yesterday.

Continue egg flip.

Vespere 4½ P. M.—The apothecary on duty was called to see him about half an hour ago, and found he had suddenly fallen down in a fit. He was lying motionless and insensible; skin hot; forehead too warm and dry; respiration blowing; eyelids firmly shut, conjunctivæ injected, pupils contracted. Involuntary evacuations from the bowels.

Ice to head.

About 10 minutes to 5 P. M. he expired.

Examination of body 14 *hours after death.*

Body in good condition, rather fatty. The most dependent parts almost black from sugillation.

Head.—Vessels of scalp bled freely on being divided. Blood dark colored and very pasty, calvarium rather thick; pia mater gorged; the arachnoid was rather opaque in some parts. Brain substance firm, but much injected. Lateral ventricles contained about a table spoonfull of clear serum. There was also a little clear serum in the sub-arachnoidæn spaces; neither on the surface nor in the substance was any extravasation of blood detected.

Thorax—Organs normal.

Abdomen.—Liver enlarged in all directions, the lower border extending about two inches below free margin of ribs and rounded; the whole organ of a dark color, much congested and structure easily broken down. Gall bladder full. Kidneys enlarged, congested, of dark mottled appearance, and their cut surfaces exuded blood freely, about two-thirds of tubular structure of each organ obliterated.

Case VI.—*Delirium Tremens, terminating in epileptoid seizure and Coma. Death.*

———— Æt. 45; tall, muscular; temperament nervo-sanguine; habits intemperate; service in India 25 years.

23*rd May* 18—.—Admitted at 11½ A. M., in a highly excited state from continued drinking and with a powerful odor of ardent spirits. Can scarcely be induced to remain in hos-

pital. Has long been in the habit of drinking to excess, and was sometime ago reduced in rank on this account.

5 P. M.—Has been in a heavy sleep ever since admission. Is now asleep on his side.

Spoon diet.

Egg posset 1 pint, cold, every 2nd hour.

24*th.*—Still has a strong odor of spirits, and is inclined now to walk about and be talkative; skin warm and moist; tongue foul, moist; pulse soft, full, weak; no stool.

Opii. gr. iv.
Ant. Pot. Tart. gr. i.
Every 2nd hour.

Continue cold posset every 2nd hour.

5. P. M.—Rather impudent in his address; very restless; no sleep all day; skin cool and moist; pulse well filled, of fair strength; talks great nonsense.

Continue medicine every hour.

25*th.*—No sleep during night, and could not be prevented by the coolies from wandering round the wards, exhausting himself and disturbing the patients. Says the pills made him very sick; no stool; pulse of fair strength; eyes blood shot; head dry and cool.

Omit Ant. Pot. Tart.
℞ Opii. gr. iv.
Calomel gr. i. every 3rd hour.

5 P. M.—Has kept to his cot to-day, but has not slept, and is now commencing to walk about, as last night, and be troublesome; insists on leaving hospital.

To be placed in room next Hospital Serjeant's Quarters, with door open and three servants to attend him.

Continue medicine and posset.
Ol. Ricini ʒ ii. now.

26*th.*—Very unmanagable all night and talking incessantly. Has taken very few of his pills, and little food; pulse very weak and quick; skin clammy; head very cool; tongue moist and pretty clean: bowels not moved yet; says he would like a glass of beer and a cheroot.

Beer 1 pint now, and repeat at noon.
℞ Sol. Ant. Pot. Tart. ʒ ii.
Tinct. Opii. ʒ ii. *Misce.*
Ft. haustus: To be taken thrice a day.
Ordered to continue posset.

2 P. M.—Bowels moved very freely this forenoon, stools lumpy and floating in thick brown oily bile; took two pints of posset and had his beer twice and smoked a cheroot; upon the whole he has been quiet. A few minutes ago, while he was sitting on the shut close stool, the servant in attendance observed him shake and then become convulsed. I attended immediately and found him on his cot in a fit of epileptoid character. Toes turned down; hands clenched; face pale; pupils contracted and immoveable; skin hot and dry; head hot and dry; pulse 140, soft and weak; makes a moaning noise constantly and moves his legs and arms rapidly, requiring him to be held; no froth on lips; cannot speak now, but spoke something indistinctly when lifted on to cot. Has just passed water involuntarily and copiously.

Ice to head.
Leeches 3 to each temple.

3¼ P. M.—Continued in the fit till a few minutes ago, when he vomited a large quantity of brown bile suddenly, became quiet and expired.

He had a few spoonfuls of wine at 2½ P. M. as his pulse was excessively feeble and above 140, but it nearly choked him. The leeches would not bite and the ice did not arrive in time.

26*th May*, 18—.—*Examination of body at* 6 P. M., General sugillation on back of arms, legs and trunk. This came on at the instant of death. General appearance very muscular. *Head*—Scalp loaded with dark blood; veins of interior of scull gorged with liquid blood. No opacity of arachnoid. Great distension of vessels of piamater, but they were quickly emptied by drainage, with the exception of the vessels on the upper part of the left lobe of brain, and these remained turgid in spite of position and pressure with the fingers. Not only was there distension of these vessels, but there was a fixed diffuse redness over the top of the hemisphere, indicating the commencement of meningitis. The substance of the brain was unusually pale and free from red spots, when cut across. The choroid plexuses were much engorged, but there was not a drop of exudation in the ventricles. Piamater round medulla oblongata, much distended with blood.

Chest.—Lungs pale; filling the chest and not contracting in the least, as if organic contractility and resilliency of

elastic tissues were exhausted; no œdema of lungs; no effusion in pleuræ or pericardium. Heart of good strength and size, partially covered with fat, well contracted and empty on both sides.

Abdomen.—Stomach and intestines strong and healthy; liver much enlarged, stretching from side to side and very hard, especially in left lobe. The only normal structure was at the upper part of right lobe, which was of good color, exhibited abundance of acini and was free from granular deposit. All the rest was rough, hard, and granular, and did not exhibit a trace of acini, nor any vessels except larger branches. Gall bladder distended with much brown bile. Spleen normal in size; kidneys normal in size, too firm, dark red, congested, granular, and not containing one-third of the proper development of tubules.

Case VII.—*Delirium Tremens with Typhoid prostration.*

———— Æt. 60. Private Queen's Pensioner, a very muscular man with a fine head of hair, free from grey; temperament nervo-sanguine.

6th January.—Admitted into the General Hospital at 3½ A. M. Face pale; tongue furred and dry; extreme thirst; trembling of the hands and tongue, mutters to himself and picks the bed cloths. Is restless and has headache; countenance expresses confusion of mind, but he answers rationally; skin temperate and dry; lies on his back, and is unable to move in bed; pulse small, quick and weak; bowels constipated; no urine seen. Has been indulging in spirituous liquors for the last week and asigns this it as the cause of the present illness. But he has also been starving.

Ol. Ricini. ʒ ii. now.
Egg flip O. i. every fourth hour.
Chicken pepperwater O. iv.

Vespere.—Much steadier this evening; was rather excited and irritable during the day, but is now collected; bowels freely opened by the oil this forenoon.

To have egg flip O. i. every third hour.

7th.—Is reported to have been quiet during the night and is quiet now. No tremor; answers readily and rationally; does not mutter to himself, neither does he pick the bed clothes;

sleep disturbed by frightful dreams; pulse 62, pretty full, feeble; plenty of urine; no stool.

Egg flip O. i. thrice.
Continue pepperwater.

Vespere.—Doing well; no tremor; tongue dirty but not tremulous; pulse 96, full; several stools during the day.

Repeat egg flip O. i. at 6 and 8 P. M.

8th.—Improving rapidly; had a pretty good sleep last night. Is quiet now; answers questions readily and more rationally; no headache complained of; pulse full and steady; tongue slightly foul; no stool; urine pretty clear.

Egg flip O. i., thrice.

10th—Had a bad night's rest; bowels moved several times; no headache; pulse full and steady; tongue still rather foul; urine clear.

Omit flip.

12th.—Improving rapidly; had a pretty good sleep last night; tongue clean; urine clear.

14th.—Quite well. Discharged.

Case VIII.—*Delirium Tremens, Death from Exhaustion:*

———— Æt. 38. Weight about 260 pounds; loaded with fat. Temperament phlegmatic; habits extremely intemperate.

1st August 18—.—Brought to hospital at 2 P. M., complaining of his bowels having been loose during the last few days. Stools copious, watery yellow feculence, no pain, nor griping; is very reserved and taciturn on the subject of his illness, but admits that he has had several loose stools daily for some years. Skin warm and dry, face flushed; headache; hands tremulous; pulse soft, weak and quick; tongue foul and red edged; stomach so irritable that he cannot retain any fluid; has been drinking hard for several weeks and is now very feeble.

℞ Spirit. Ether. Nitrici. ℥ iss.
Chloroform ℥ i.
Alcohol ℥ ii.
Tinct. Opii. ℥ i.
Spir. Lavand. Co. ℥ ii.
Aqua ℥ viii. *m.*

℥ iss. with ℥ ii. of water at 5 and 9 P. M.

Chicken mullagatawny made with garlic 2 pints.

2nd.—No sleep, very restless and constantly moving about the ward; frequently purged, and has vomited twice or thrice; stools copious, watery, yellow feculence; skin warm; face still flushed tongue foul and red edged; rejected the first dose of medicine last night.

Chicken mullagatawny 3 pints.

Egg flip 1 pint at 11 A. M. and 2 P. M.

Vespere.—Several watery stools to-day occasioned, he thinks, by the egg flip; is stronger; pulse 90, soft, of fair strength; face less flushed; skin normal in temperature; tongue foul, red edged; loathes food.

Chicken mullagatawny 3 pints.

Take of Eggs No. iii.
Sugar ℥ i.
Salt ℥ ss.
Water ℥ iii.

Beat up well and give one draught at 5, another at 9 P. M.

3rd.—Had two stools last night, watery, yellow, feculent; complains of great weakness, is giddy and unable to stand; has a heavy pain across forehead; pulse scarcely perceptible, about 120; skin cold and clammy; vomited about half a pint of greenish fluid at 6 P. M. yesterday. Tongue pale, red edged, says he cannot take mullagatawny.

Beef soup 3 pints.

Take of Arrack ℥ iii.
Eggs No. 4.
Sugar ℥ i.
Salt ʒ ss. *mix* and give one such draught at 10 A. M., and at 1 and 4 P. M.

Vespere.—Feels very weak and thirsty; perspires freely; skin temperate; took his soup; vomited about 10 A. M. Does not feel giddy now; pulse 132, stronger than this morning, moderately full; tongue foul and red edged and tipped; respiration slow and sobbing; had one stool at 4 P. M. of moderate consistence; vomited his egg flip a few minutes ago; heart's action normal; pulse quick and weak.

Continue soup. Omit flip.

4th.—Complains of being very weak and thirsty; had a quart of beer, in draughts of 6 ounces, with 12 eggs. Respiration tranquil; tongue foul, red-edged. Three stools last

night, small in quantity; vomited a little. Pulse 96 of fair volume and strength; heart's sound distinct, impulse moderate. Forehead rather too warm.

Egg flip, O ss. at 10 A. M., and 2 and 6 P. M.
Beef soup, O iii.

Vespere.—At 12 noon became noisy and rather troublesome, but not in any way violent, wandering about the wards. Stomach irritable; skin dry, temperate; forehead somewhat cooler; heart's sound clear, and of fair strength; three stools, which seem to have distressed him very much by their acridity.

Egg flip, O ss. at 8 and 12 P. M.

5th.—Was very quiet last night; had two stools, nothing particular about them; complains this morning of a great pain in right hypochondrium, increased very much on the slightest pressure, and rendering him unable to lie on the left side. Respiration somewhat hurried; skin not too warm; tongue foul, and red egded; pulse quick and weak.

R. Pulv. Rhei gr. xv.
Tinct. Zingiberis ʒ ii.
Aqua ℥ ii. *m.*
thrice a day.
Cont. soup and egg flip as yesterday.

From this time his bodily strength declined steadily. In the afternoon he was very feeble and he did not make any complaint; but his mind was remarkably clear, and at 6 P. M. he executed a will containing several important details, all of which he remembered distinctly when questioned on them to test his competency before the document was signed. From that hour he became more and more feeble notwithstanding the employment of stimulants. The respiratory murmur became very coarse and he died at 3 A. M., 6th August.

An examination of the body could not be obtained.

CASE IX.—*Delirium Tremens, with large Abscess in the Liver. Death.*

———— Æt. 27, Pauper. Had been a soldier, but purchased his discharge; temperament bilio-sanguine; habit spare, with very flabby abdomen; habits very intemperate for some years.

28*th September* 18——Admitted into hospital at 8 A. M., complaining of pain in the pit of the stomach; eyes suffused; tongue furred; bowels confined; pulse quick and weak; feet œdematous; feels sick and complains of want of appetite. Is so feeble and stupid that he can afford but little information concerning his mode of life, and evinces no decided symptoms but those of great nervousness. He has been drinking hard, and generally sleeping in the open air at night, for nearly two years. Has already had delirium tremens.

℞ Oli. Ricini ℥ ii.
Aqua. Cinnamom ℥ ii.
Chicken mullagatawny 2 pints.

Vespere.—Oil has not operated. Is in other respects as on this morning.

Repeat Castor oil draught.
Chicken pepperwater 1 pint.

2*nd October.*—Bowels freely moved, was very delirious last night.

Cont. Chicken mullagatawny.

3*rd.*—On this date he complained for the first time of pains in the right side. It was much bulged out; and, on percussion, the liver was found much enlarged in every direction. He was too feeble, however, to admit of much examination. On the 6th October, more careful examination proved the liver to be compressing the right lung very much, and the respiratory murmur in the left lung was very feeble. On the morning of the 7th October, he began to sink; and, although supported by soup and brandy, died at 11 A. M.

Post mortem examination five hours after death.

Body much emaciated, feet œdematous.

Thorax.—Right lung pressed up by enlarged liver as high as third rib. Some serous effusion around this compressed lung which was much condensed. Liver enormously enlarged, extending right across abdomen, and from 3rd rib above to about 3 inches below cartilages of last rib. It was gorged, dark and soft, and could not be removed; there were no adhesions to surrounding parts. It contained fully two quarts of thick white pus, and the anterior wall of

the abscess was so thin that it tore readily; stomach and intestines thin, pale; kidneys deficient in tubular structure.

In the last five years, commencing 1st January 1858, there have been forty one cases of Delirium Tremens in this hospital, and six of them have died. The annexed table, drawn up with great care by Mr. Assistant Apothecary D'Santos and myself, represents the admissions and deaths from Ebrietas and Delirium Tremens for those five years. It is, I believe, very correct, except as to one case of Ebrietas admitted in April 1859, and which ran into Delirium Tremens of a very mild kind, followed by temporary paralysis of right arm, but which has been retained by mistake under the first head. The greatest amount of drunkenness and delirium tremens for any year was in 1860, and is to be accounted for by the large number of men who then returned from Bengal or were brought from England on account of the increased demand for skilled European labor which the mutiny occasioned, and who had ample means for involving themselves and others in dissipation.

This table gives only the admissions from uncomplicated drunkenness. Those cases of intoxication which had received cuts or bruises were, of course, placed on the surgical side of the hospital and entered according to the nature of the accident. Still, four hundred and twenty cases of drunkenness, so deep as to require the assistance of a hospital and brought in, therefore, for safety by friends or orderlies or the Police, is a large number for the limited European population to furnish in five years. Some of these cases have required prompt and energetic assistance to prevent death from coma. A few, but very few, have exhibited some slight symptoms of incipient delirium tremens after a few days detention in hospital.

During the last three years the average residence in hospital of European Military cases of Ebrietas has been seven days, and of Civil Europeans eight days. These cases have been always put as soon as possible after admission on a diet of chicken mullagatawny. It is always well boiled, and contains for such cases plenty of spice and garlic and little red pepper. Given cold to the patient as a drink, it is almost always much relished and easily retained when other kinds of food are declined, or rejected almost as soon as taken.

Tabular Statement of the admissions and deaths from Ebrietas and Delirium Tremens for five years, from 1st January 1858 to 31st December 1862.

Months.	1858.				1859.				1860.				1861.				1862.			
	Ebrietas.		Del. Tremens.		Ebrietas.		Del. Tremens.		Ebrietas.		Del. Tremens.		Ebrietas.		Del. Tremens.		Ebrietas.		Del. Tremens.	
	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.	Admissions	Deaths.
January	none	none	1	none	9	none	1	none	8	none	2	none	7	none	4	none	8	none	none	none
February	7	...	none	...	9	..	none	..	12	..	none	...	7	..	none	..	7	...	..	...
March	4	...	...	...	2	..	..	..	10	..	3	2	11	..	..	..	9	...	..	...
April	7	...	1	...	10	..	..	..	7	..	1	none	8	..	2	..	14	...	..	...
May	3	...	none	...	*12	*b*1	..	..	11	..	1	...	14	..	2	1	5	...	..	...
June	4	...	...	...	*4	none	1	..	5	..	1	...	7	..	1	none	5	...	..	...
July	2	...	...	...	9	..	none	..	14	..	2	...	10	..	1	..	11	...	..	...
August	2	...	...	...	4	..	..	..	9	..	none	...	7	..	1	..	9	...	2	1
September	5	...	1	...	none	..	..	..	12	..	..	...	12	..	2	2	2	...	none	none
October	7	*a*1	1	...	..	..	1	..	8	..	2	...	9	..	1	none	8	...	..	...
November	2	none	none	...	3	..	none	..	8	..	2	...	8	..	none	..	7	...	1	...
December	5	...	...	...	6	..	..	..	7	..	1	...	3	..	..	..	6	...	2	...
Total	48	1	4	none	68	1	3	none	111	none	15	2	103	none	14	3	91	none	5	1

Total of Ebrietas admissions in 5 years 421.
Do. deaths to admissions in 5 years 2 or 0·47 per cent.
Do. of Delirium Tremens admissions in 5 years 41.
Do. Deaths to admissions in 5 years 6 or 14·6 per cent.

General Hospital, Madras, 1st *January* 1863.

* 1 Female admitted in May, and 1 in June 1859: both recovered.

a A pensioned Private: cause of death not stated in case book.
b Do. do. death occasioned by Epilepsy aggravated by intoxication.

An adequate supply of this kind of nutritive food alone, especially if preceded by a smart purgative, will, in a great majority of cases of ebrietas, even where the dissipation has been excessive, be quite sufficient to prevent the accession of delirium tremens. If vomiting be present, there is little likelihood of the latter disease coming on, so long as the vomiting is not interfered with. Vomiting cases, indeed, are almost always good cases. It is better, therefore, rather to allow the patient to go without food for a time than to check vomiting.

The pulse almost invariably gives good warning of the approach of delirium tremens some hours before its actual appearance. If the pulse fall twenty to thirty beats in a few hours, delirium may be expected within six or eight hours at farthest. Few cases of ebrietas are prevented from running into delirium tremens when the pulse falls to 60, before the patient has slept soundly, unless some very certain nutritive stimulant be promptly administered. About one ounce of garlic boiled in each pint of mullagatawny does much to prevent delirium tremens; but if the pulse, notwithstanding this, diminish rapidly in force and frequency, the accession may still, in most cases, be averted by full doses of garlic decoction, made with one pound of the bruised cloves to a pound of water, and given cold, four to eight ounces at a time, at intervals of two hours, till sixteen to twenty-four ounces have been taken. Sometimes, as in large headed men, it is necessary to give it for a longer period, but not often. After the first drunken sleep, at the time the person is finally shut off from intoxicating fluids, there is, in decided cases of ebrietas, scarcely any likelihood of sleep before the evening of the third day. It is then of an uneasy kind and only for one to three hours. If delirium tremens be avoided, however, a long sound sleep will be obtained at the commencement of the fifth day; and every care should therefore, be taken by exhibition of purgatives, diluent fluid, arotised food and garlic to ward off delirium till that period, after which the patient is quite safe.

In asthenic cases of delirium tremens, very opposite means of treatment have been had recourse to by various practitioners, and successful results might be quoted in favor of every method except that of blood letting, which, as is well known now, is suitable only for asthenic cases presenting symptoms of encephalitis. The most generally successful treatment

of asthenic or cold skinned cases, where medicine has been employed, has been, I believe, by purgatives alone, or by purgatives followed by opium, with or without tartar emetic. The most generally unsuccessful plan has been that of the administration of brandy with opium in repeated doses. That plan appears to me the best which interferes least with the natural tendency of uncomplicated cases to terminate in recovery. Many cases appear to recover through the influence of medicine, while in reality they would have terminated in health had medicine never been exhibited. Unless thrown out of its proper course by exciting treatment, Delirium Tremens has a great tendency to spontaneous mitigation by a short sleep on the third day, and to termination by prolonged sleep at the commencement of the fifth day. Brisk purgatives and good nutritive food predispose the person to the accession of this critical period, and an opiate given at the approach of a crisis *may*, in some cases, render its accession more certain. But spontaneous recovery on critical days, without any of these aids having been applied, is not uncommon.

The first thing to be attended to after placing the patient in a safe airy place, where personal restraint will not be required, is to give him a brisk purgative. A full dose of castor oil is usually the best, and is almost invariably swallowed without the slightest dissent if presented by a stranger. If further purging be required, after the oil has operated, a full dose of aloes, say 20 to 30 grains, dissolved in ℥ iss of water, with 20 to 30 grains of Carbonates of Potass and Soda respectively, will likely be found very useful. This dose is a good tonic and acts energetically on the liver. But any smart purgative will be of great service.

The effect of free purgation in abating or arresting the tremors is, as most practitioners are aware, very remarkable. Judging by the effects of purgatives in these cases, the loss of muscular co-ordination appears to be occasioned by some blood poison acting on the spinal chord, and that poison appears to find a ready outlet by the fœcal glands when their functions are excited. The delirium is evidently produced partly by want of cerebral nutrition, and partly by cerebral irritation, occasioned probably by the blood irritant which causes the tremors. Free purgation renders the delirium of a much more endurable kind, by depriving it of many of its subjective horrors, but the less speci-

fic portion of the delirium, which resembles in many points the delirium of persons suffering from famine, but still able to move about, can only be removed by sleep, which implies here, as it indicates every where, the setting in of tissue reparation. Blood however must first be made to admit of this repair, and with this view the patient should now be liberally supplied with well made chicken mullagatawny. However much a man in delirium tremens may object to other articles of diet, this kind of soup is almost never refused. But the patient requires usually much more nourishment than he can imbibe in this form. He has generally undergone ten or fourteen days' starvation before coming under treatment, even where he has had access to good food during his debauch; and, although he will not ask for food after delirium commences, he will yet take a quantity truly surprising to those not conversant with such cases, if it be put before him in a suitable and agreeable form, such as he can drink.

The mullagatawny acts as a grateful stimulant to the stomach, and when its tone is a little restored the patient is usually well disposed for food of any kind, if it can be easily swallowed. The egg flip, which I have long depended upon, in conjunction with mullagatawny, for the nutrition of such cases, is never refused if it be only once tasted. It is not required in mild cases. In moderately severe cases it should be withheld till evening, by which time the patient is always becoming more unmanageable and often will not take any thing which is not, like flip, very agreeable to him. But in cases where there is extreme nervousness and exhaustion, and where every precaution is necessary to prevent death from asthenia, it is best to give draughts of mullagatawny and flip alternately every second hour, both day and night. The calmative effect of the beer is of great value in these cases; and, when well frothed up with egg, sugar and salt, the draught is most grateful to the patient. The beer is not always required. In the generality of cases two or three pints are sufficient in the course of twenty-four hours; and the eggs, which are very necessary to ensure an adequate amount of tissue making food, may be given only with sugar water and salt every second hour. Some of these unfortunate starving delirium tremens cases thus easily consume forty to forty-eight eggs, or fifty to seventy-two ounces of animal matter in twenty-four hours, besides drinking three or four pints of cold mullagatawny. Whatever the quantity of nourishment taken, however, sleep will not come

till the critical period; but although sleep will not come before its appointed time, the well fed man is always a quiet man, and the patient is much more peaceable and well disposed on this ample supply of food than we can ever induce him to be when on thin broths and congees. As for sago and arrowroot they should be avoided as of little service in this disease. There is too little secretion going on to allow them to be converted into sugar and applied to respiratory purposes; and they are, therefore, likely in the bad cases to get no further than the intestine till the next purgative be given.*

Having great reliance on the tendency to sleep on the fifth day, I never now exhibit opium unless in very exceptional circumstances. It may not dispose to the induction of epileptoid fits in some of these cases, although I think it sometimes does, as in Case VI, of the above series, but I am certain it does no good unless given when sleep is about to ensue spontaneously, when, in fact, it is scarcely, if at all, required, and often does much harm when given at non-critical periods. The following case is interesting as showing of how little service opium sometimes is even in preventing an attack of delirium tremens, and what soothing effects follow the use of a very simple saline remedy, but one which is very essential to a normal condition of the tissues. As Dr. Franz Simon remarks in his Animal Chemistry,† Vol. I., page 1. "Phosphate of Lime, in the importance of its physical properties to the animal organism, undoubtedly ranks next to water," and I believe it is a valuable medi-

* In some excellent practical works on medicine which recommend nourishment with stimulants and opium in the asthenic variety, the nourishment is found to be only sago or some similar slop, when the details of cases are looked into. Dr. Thomas Watson is more liberal. He says at page 411, Vol. I of his Lectures on the Principles and Practice of Physic, edition of 1857, "If you learn that, notwithstanding the intemperate habits of the patient, his appetite for food has continued unimpaired, and his digestion sound, you will, I believe, generally find that good nourishing diet, strong broths, for example, and the opium, will suffice for the cure." Such a case of unimpaired appetite is seldom found in the subjects of this disease and where the appetite is good it does not appear to be the best practice to incur the risk of blunting it by a narcotic. But the important point in the treatment of such cases is to induce the patient from the first to take a sufficiency of food whether he has an appetite or not. The cases which are in most urgent need of food are just those which have no appetite; and the only way to excite an appetite is to remove the atony and feebleness of the stomach at once by spiced soup. When the loathing of food has thus been overcome, there will be no difficulty in supporting the patient's strength.

† Old Sydenham Society, 1854.

cine in many derangements of nutrition. In this case it was apparently of great service in inducing sound sleep, the only infallible proof of the resumption of nutrition.

The question often arises in practice when the case of delirious tremens is a severe one, especially when it has to be treated in a dwelling house, where the feelings of the relations compelled to listen to the patient's hallucinations are entitled to almost as much consideration as the patient himself, whether it be not possible to cut short the attack. Digitalis and opium are the only medicines to which such a power has been ascribed; but careful observation proves that they have obtained that repute from having been in many cases in course of exhibition at the period of crisis when the resolution by sleep was due, irrespective of medicinal interference.

Digitalis has never come into general use although recommended strongly and rather indiscriminately by various practitioners during the last three years. It was first employed in 1820* for the treatment of the hot skinned or meningitic form of the disease by a New England physician; and, although it may be suitable enough for that rather uncommon form, it is a very dangerous medicine to employ in the cases with cool skin and feeble pulse. Dr. Thomas Watson in his Lectures on the Principles and Practice of Physic, Vol. I., page 412, is so pithy and pointed in his condemnation of the employment of this medicine in delirium tremens, that few who have read the passage would be inclined to have recourse to the drug.

I doubt whether a single case can be produced in which opium in safe doses has induced sleep on the first or second or fourth days of the delirium. In my experience of opium in this disease, I have never, even on the third day, (first critical day) seen a patient obtain from it more than three or four hours of indifferent repose. As in the following case 21½ grains of opium, partly solid and partly in tincture, were administered in the first twenty-eight hours after the commencement of the delirium, it may have had some effect in leading to the sleep which ensued at the end of 53½ hours; although it is scarcely possible that the action of the opium could have been suspended thirty-two hours, or from the

* Copland's Medical Dictionary, Vol. I., page 503.

twenty-first and a half hour, when the drug was omitted, until the fifty-third and a half hour, when the man fell asleep. It appears to be more reasonable to believe that the opium had no good effect; and, although the patient did not drop asleep until five and a half hours of the first critical day had elapsed, and when he was sure of some amount of sleep without assistance from medicine, the sleep was so remarkably sound and prolonged when it did commence, that I am right I think in concluding that the superphosphate of lime had considerable influence in terminating the disease.

Notwithstanding the good results from the use of phosphate of lime in this and in other cases of delirium tremens where I have given it in much smaller quantities, well diluted, as an acidulated drink peculiarly agreeable to the patient, I desire not to speak confidently in its favor till I have subjected it to further trial. As the acid phosphate is not readily obtained in this country, I have seldom had enough in my possession to enable me to try it fairly; but as my friend Mr. G. Norton, late Chemical Assistant in the Medical College, and now in an Establishment of his own, has promised to prepare any quantity for me, I may hope in a few months to be able to speak with greater certainty as to its real merits in procuring sleep in this disease. Here, now, is the case I have been so long in approaching :—

Case IX.—*Hepatic Congestion, followed by Delirium Tremens; Congestion, threatening acute Inflammation, for three days; Thirty two grains of Opium administered; advent of Delirium Tremens; treatment by Phosphates; Sound sleep* 53½ *hours after the commencement of the Delirium.*

——— Æt. 41; Sergeant; 24 years in India; temperament nervo-sanguine.

12*th April.*—Admitted at 3 p. m., complaining of pain and tenderness over right hypochondrium, irritability of stomach, and a general feeling of depression. Skin of natural temperature; tongue thickly coated; pulse full, soft, not above natural frequency; bowels said to be regular and urine abundant. On percussion over right hypochondrium the dulness of liver extends from nipple to about two inches below the free border of ribs, extending across to left hypochondrium;

no cough ; occasional pains in right shoulder ; has been drinking hard lately.

4 P. M.—℞. Calomel gr. xv.
Opium gr. iv, in four pills now.
℞. Ol. Ricini ℥ iss.
Tr. Opii. ♏ xv. C.M.

Hospital liniment on spongio piline over right side.

13*th.*—Pain of side very little relieved ; slept little during the night.

Cont. Hospital Liniment.*
Spoon diet.
1 pint tea, 1 pint broth.

Vespere.—Stomach very irritable all day ; bowels moved three times ; evacuations dark colored, fœtid, feculent ; skin cool ; pulse full, soft, a little excited ; pain of side continues.

℞. Opii. gr. iv. now and at bed time.
Effervescing draughts every 2nd hour.
Cont. Liniment.

14*th.*—Passed a very restless night, sleep disturbed by frightful dreams ; irritability of stomach less ; pain of side much the same ; skin of natural warmth ; head cool ; pulse calmer this morning, soft, and of good volume ; bowels confined ; urine scanty and high colored.

Cont. Opium thrice to-day and effervescing draughts as before.

Vespere.—Says he feels better ; pain of side almost gone ; can bear some amount of pressure on right side ; no irritability of stomach ; altogether decidedly better.

Repeat Opium, twice to night.

15*th.*—Much improved ; little or no pain ; bowels confined ; urine a little more abundant, high colored.

No medicine. To have two pints chicken broth and bread extra.

Vespere, 5 P. M.—Symptoms of delirium tremens shewing themselves ; is very tremulous and rather incoherent ; tongue thickly coated with pasty yellowish fur ; skin cold and clammy ; pulse small, about 100 ; he has been very talk-

* The chief ingredients of this liniment are soap liniment, chloroform and opium.

tive during the day, and wandering about the hospital; bowels said to be moved, stools not seen.

℞. Opii. gr. iv. at 5, 7, and 9 P. M.
Chicken pepperwater, with garlic, 3 pints.

16*th.*—Symptoms of delirium tremens more marked this morning. Slept none during the night; is very incoherent and fidgetty; replies, however, to questions rationally, but with some hesitation; skin temperate; tongue thickly coated; pulse frequent, soft, of good volume and strength, pupils dilated.

℞. Tr. Opii. ℥iss.
Vin. Ant. Pot. Tart. ℥ii.
Aqua ℥ii. ♏ 9 A. M., 12 and 4 P. M.

Vespere.—Two doses only of the above medicine were given. No better; skin warm; forehead warm and perspiring; hands and feet warm; pulse small, frequent, rather weak, pupils less dilated; bowels confined; urine not seen.

℞. Tr. Opii. ℥ ss.
Sol. of Acid. Phosphate of Lime ℥i., with neutral, Phosphate of Lime ℥i, and ℈i, now:
and to be repeated to night.

8 P. M.—No change; pulse becoming weak; heart's action feeble.

Repeat Acid Phosphate Sol. without Opium.
To have beer, with eggs.
Chicken pepperwater with garlic.

17*th.*—Slept none during the night; wandering all over the hospital, never at any time violent; appears very much confused; will not remain on his cot; skin still cool and somewhat clammy; pulse small and weak and frequent; heart's action feeble; pupils semi-dilated but active; bowels confined; urine scanty, high colored; under the microscope, two stellate and several linear phosphatic crystals are observed.

Cont. Phosphatic Solution.

5 P. M.—Is now on his cot and appears calm; is less incoherent and fidgetty; speaks only when spoken to and without any hesitation. His attendant states that he has been particularly quiet since 2 P. M. Went to bed of his own accord and remained on it, leaving it only when called to stool. Is still very tremulous; skin less cold and clammy;

pulse small and frequent, weak; tongue coated; two stools since the morning, semifluid, fæculent, bright yellow; urine less scanty, high colored, with copious mucus-like deposit; no microscopic examination of urine made.

Cont. as last night.

18*th*, 6½ A. M.—Fell asleep about 10½ o'clock last night, and is now in a sound sleep.

Vespere.—Is now asleep; got up in the forenoon, took his food well, and dropped asleep again.

28*th*.—Continued to improve steadily since last report.

Discharged.

I have very seldom had recourse to the use of spirits in these cases. But in the following instance the man was unusually bulky and flabby, and the signs of debility so alarming that I was obliged to prescribe moderate doses of arrack to diminish the risk of sudden death from asthenia.

CASE X.—*Delirium Tremens, with involuntary evacuations from the Bowels.*

————; Æt. 40; Engineer; temperament bilio-sanguine. About three years in India, six feet, two inches in height; very bulky abdomen and soft fatty extremities. A hard drinker for some years; has not taken a good meal during last three months.

11*th August* 18—. —Admitted into hospital yesterday afternoon. Face flushed; eyes injected; tongue foul; muscles very flabby; no stools since admission; is tremulous all over; has been drinking unusually hard for three months. Took chicken pepperwater and a pint and a half of egg flip yesterday in hospital.

Ol. Ricini ʒ ii. now.
Chicken pepperwater 2 pints to-day,
in addition to ordinary sp. diet.

12*th*.—Had a fair amount of sleep last night. The oil operated well; is less tremulous; tongue foul.

Chicken pepperwater 4 pints to-day.

Vespere.—Has been very quiet, but is now complaining and fidgetty, and says he is giddy and has a kind of knocking at times on his head; occasionally he sees spectra. Has

taken nearly four pints of chicken pepperwater and a very little chicken to-day; tongue very purple, red at edge, rough and yellow at centre, contracted; face very red; eyes clear; bowels moved three times to-day, by his own account; skin cool, perspires rather copiously; replies rationally to questions, and is civil in manner; pulse very feeble, 72, rather more at times; scarcely any tremor.

Egg flip O i. with arrack ℥ iii. at 5 and 6 P. M.; then every 2nd hour without arrack till he becomes quieter.

13*th.*—Very nervous and tremulous; fidgetty in manner; walks constantly; speaks rapidly and incoherently; says he feels light about the back part of head; mind confused and memory bad; no sleep.

Chicken pepperwater 3 pints.
To be carefully watched.

Vespere.—Continually walking and trying to get out of hospital; skin cool and dry; voice very weak; mind wandering very much; tongue soft, clean, large; pulse quick and very weak; heart's sound, feeble, but clear; has taken three pints of chicken pepperwater since morning.

Egg flip O i. every 2nd hour.

The first two to contain each one measure of arrack.

14*th.*—Very restless all night; took six pints of flip; pulse 120, soft, weak, variable; skin cool, and very moist; tongue red and contracted; stools passed last night into his clothes; is sometimes incoherent, at others rational.

Cont. pepperwater.

Vespere.—Much the same as in morning report. Pulse 108, pretty steady, but weak; skin clammy.

Repeat flip as yesterday evening.

15*th.*—Very restless last night and had much wandering of mind; much quieter this morning; skin of natural temperature; pulse 120, weak and quick; tongue cleaner, less red edged; had two stools last night, passed in clothes.

Ext. Opii. ʒi.
Water O ss.
Make a solution to be sponged over body.

Vespere.—Sponged twice to-day with opiate solution ʒi. of opium each time; still incoherent; two stools passed in night chair to-day; tongue clean, of good color; pulse 108 to 120, soft, weak; says fingers of both hands are numb;

skin of fair temperature, moist; had one pint of egg flip at 2 P. M.

Egg flip O i.
Every 2nd hour till he falls asleep.
Sponge again with opium solution.

16*th.*—His pulse at 9½ P. M., last night, was 144 when he was recumbent; it is now 96 to 120. Slept somewhat towards morning; still nervous and suspicious looking; eyes injected, sharp and sparkling; bowels moved twice, stools becoming formed, and he does not now pass them in his clothes; urine in fair quantity.

Eggs No. 3
Phosphat: Calcis ʒ iii.
Syrup ℥ ii.
Water q. s. to make a draught.
Beat well up and give three or four times a day.

17*th.*—Slept well last night for four hours; is well but weak. Pulse 80, steady.

Repeat eggs and Phosph. Calcis.
As yesterday.

18*th.*—Doing well.

Egg flip thrice.

20*th.*—Continues improving steadily.

Egg flip O i. at 8 P. M.

23*rd.*—Almost well.

25*th.*—Quite well.

Discharged.

The risk of sudden death appeared to me to be so great in this case owing to his feeble, flabby, badly nourished condition and constant restlessness, that, in addition to the good diet and stimulants, I had recourse also to opiate sponging, which I have occasionally found of great service in other cases of continued restlessness and sleeplessness from refusal of sufficient food. I might have exhibited the opium in draught or pill, by enema of course was out of the question; but rapid digestion of food was of such prime importance to his safety, that I desired to avoid the direct action of opium on the viscera and keep his stomach for food alone. Bad though the case was from the first, and much though it was interfered with by alcoholic stimulation, which should always be avoided if possible, yet, dating from the night on

which he slept before delirium tremens appeared, the sleep of convalescence appeared at the beginning of the fifth day.

Had I been as well convinced then, as I am now, of the great value of garlic in lowering and strengthening the pulse when it is quick and weak, and calming nervous excitement, I would not have administered arrack, as I believe that in thus putting him on even a moderate amount of the stimulant which had by slow degrees brought on the delirium, I was, to some extent, postponing his restoration to health, although the stimulant was very necessary for his safety in the absence of a better remedy.

The following case shows the value of garlic and its superiority to alcohol in the treatment of this disease. Sleep would perhaps have come on before the first critical day had the garlic been sooner used in quantity. It was a third attack in a man near middle life, who had long pursued a course of intemperance, and it was complicated with considerable enlargement of the liver. The delirium from the time it commenced was violent and continuous. Even in full day light the hallucinations of sight were remarkably exhibited, and he often required to be held by three or four attendants to prevent him from running out after imaginary enemies. Yet on the third night he slept soundly, at intervals, after taking fourteen ounces of garlic decoction, did not occasion any further trouble, and by the fifth day was so well that a recent attack of the kind would never have been suspected by any one ignorant of his antecedents.

Case XI.—*Delirium Tremens.*

———; Æt. 38; 5½ years in India. Temperament sanguine; habits intemperate. Has twice had delirium tremens.

7th December 1862, 4½ P. M., *Vespere.*—Brought to hospital by a friend who has had much difficulty in inducing him to put himself under treatment; has been a hard drinker for years, and has been drinking very hard during last week; has now a strong acid odor of bad spirits; face very red and swelled; conjunctivæ injected; pupils sluggish, rather dilated; tongue foul, thick, large and purple edged; pulse 120, very small and weak when he is sitting; skin dry, temperate; manner morose and restless; talk incoherent, says he has pain all over head, even at the occiput, and that he his tender all over. Muscles of arms, forearms and hands very

tremulous; state of bowels not known. Hepatic dullness five inches from nipple downwards.

℞ Ol. Ricini ʒ ii. now.

8th.—Had no sleep; has been wandering about the wards all night; is still very tremulous; no pain now; expresses a desire for food; face flushed; pupils very sluggish; bowels moved three times, a large quantity of semifluid dark brown feculence; about one pint of urine mixed with stool; forehead warm and perspiring; extremities cool, moist; pulse 108, moderately full, soft, weak; tongue thickly coated with dirty white fur, pale, red edged.

℞. Aloes grs. xii.
Sodæ Carbonat: grs. xxv.
Aquæ ʒ iv.
Spts. Lavand. co. ʒ ii. *m.*
Thrice to-day.

Vespere.—Did not sleep, but appears much better; not so nervous; face flushed; pupils not so dilated, though still sluggish; bowels moved twice; passed a fair quantity of urine; no pain; tongue cleaning, red edged, skin warm, moist; pulse 120, weak; took his food well to-day.

Flip. O i. at 5 P. M.

9th.—Did not sleep; is delirious now, and has been so all night; says he has pain in top of the head, is not quite so nervous; face still flushed; pupils slightly dilated, sluggish; skin temperate; covered with perspiration; bowels moved three times; tongue thickly coated with dry white fur, purple edged; pulse 72, moderately full, soft; heart's sounds clear.

Cont. pepperwater O iv.

Vespere.—Has been very delirious and violent all day. Has been so excited by various hallucinations and illusions, that he is now quite exhausted. No sleep; bowels not moved! no urine passed; took all his pepperwater, tongue thickly loaded with dirty white fur, dry; skin cool; pulse 120, soft, full, feeble.

Flip. O iii.

10th.—Took fourteen ounces of garlic infusion late last night; appears much better; slept soundly at intervals; is not delirious to-day. Bowels moved three times, very

dark, half formed feculence; about two and half pints of urine; face still flushed; pupils rather dilated, sluggish; nervousness much less; tongue thickly coated with yellow fur, red edged; skin temperate; moist, pulse moderately full, soft, 80 to 84.

Decoct. Garlic ʒ iv. thrice a day.
Cont. pepperwater.

11*th.*—Slept very indifferently till 2 A. M., after which time he slept very soundly till 6; feels very much better, but very weak; face not so flushed, pupils rather dilated, but not so sluggish; bowels moved four times, feculence, half formed, healthy; skin warm, moist; tongue furred yellow, red edged; pulse 96, full, soft, feeble; about three pints of urine.

Decoct. Garlic ʒ viii. thrice.

Vespere.—Is much better; kept awake to-day; less nervousness; bowels moved once; urine in good quantity; tongue clean; skin temperate, moist; pulse 80, moderately full, soft; took his food well.

Flip. O ii.

12*th.*—Enjoyed a good night's rest; feels quite well now. Bowels regular; skin cool, moist; tongue clean; pulse moderately full, soft.

Nil.

13*th.*—Is now very well, only a little weak.

15*th.*—Doing very well.

19*th.*—Quite well.

Discharged.

Delirium tremens with complications such as were experienced in the six fatal cases I have recorded is sure to be an unsatisfactory disease to treat; and, as we are sometimes not aware of the presence of complications, or can only form some idea of their extent, when we do recognize them, by the duration of the course of intemperance, we should always be very cautious in our prognosis. Even in the mildest case, syncope, with or without an epileptoid fit, may suddenly terminate life.

Much may certainly be done by free use of purgative medicine with good spiced nourishment to prevent the accession of convulsions, and I cannot but take blame to myself for the insufficiency of the purgative part of the treatment in cases

V. and VI. ; but convulsions cannot *with certainty* be averted by any plan of treatment in any case of delirium tremens. They are apparently occasioned by sudden depression of cerebral power through either constriction or congestion of the cerebral vessels ; and, in either case, the want of sufficient change of nutritive blood to the brain cells, when the spinal chord is in a highly irritable state, appears to be the starting point of the convulsion. A brain interrupted in its functions is for the time little better than no brain, and as the decapitated and exsanguine frog has its muscles convulsed by any sudden start, as a concussion of the table on which it is placed, so the excitability of the already very irritable spinal chord in delirium tremens becomes suddenly unduly developed in some cases when the presiding power of the brain is for a moment suspended.

Whatever may be the rationale of these convulsive seizures they have, like all other convulsive manifestations, debility for their predisposing cause, and should be treated accordingly. As we always have considerable heat of head and general surface in these convulsions, we are too apt to attribute the convulsion to fulness of blood vessels and increase of power and heat, and therefore hurry to employ ice, forgetting that the person was in a cold and feeble state before the fit occurred, and that the heat has been developed by the severe muscular movements. We would be as correct were we to infer that a man who is much heated by exercise was hot and perspiring before he began the exercise. If the convulsion be not immediately fatal, stimulants can readily be swallowed by teaspoonfuls, unless the power of deglutition is failing from rapid sinking, as these convulsions, except in those who are subject to epilepsy, are not truly epileptic, and not therefore attended with pharyngismus and its accompanying salivary frothing at the mouth. The good effects of the administration of a stimulant are well exemplified, I think, in case IV. of this paper.

Although I have seen great and continued misuse of ardent spirits by natives of the Madras Presidency, I have seen only one case of delirium tremens among them, in all my long experience, and it was occasioned by Gunja. This remarkable infrequency of delirium tremens among spirit drinking natives of India, which Dr. Morehead, in his "Researches on Disease in India," Vol. II, page 570, admits, that,

after all his very long experience, he is unable to explain, may probably be ascribed to the free employment of garlic and onions in their food. The Portuguese, and also the Jews, who have divine authority for the use of wine, are rarely the subjects of delirium tremens, and their free use of garlic and onions is well known. Of course temperance or peculiarity of constitution may account for their immunity from delirium tremens; but, knowing how freely intoxicants are consumed by all nations, I am inclined to ascribe it to the garlic. The garlic-hating Britons are, of all people, most subject to this terrible consequence of debauchery with alcoholic drinks. Garlic, indeed, appears to be a very effectual antidote to many of the pernicious effects of alcohol.

I shall now conclude with a short summary of what I consider the best treatment for the asthenic form of the disease.

I.—When any one is brought under treatment on account of continued ebriositas, every endeavour should be made to prevent the occurrence of delirium tremens. With this view he should be made to take a brisk purgative even before he is quite sober. If an emetic have been given followed by ounce doses of Acetate of Ammonia and draughts of plain cold coffee during the period of intoxiation, so much the better. He should then be placed in a cool airy room, well washed as soon as possible, fed with spiced soup, and, in marked cases, after the second day of soberness, allowed a pint or two of egg flip in the evening. If the man have been drinking during a week or ten days, decoction of Garlic should be administered from an early period.

II.—The asthenic form of delirium tremens is invariably remittent, the delirium and restlessness being comparatively moderate during the day and aggravated from sun-set to sun-rise. Diligent use should therefore be made of the day. Nourishment should also be given through the night, but there is no certainty of food being taken except during the day.

III.—There is, in all uncomplicated cases in which secretion, excretion, and nutrition have been encouraged, or, at least, not interfered with, an intermission of symptoms and a sleep of three to six hours at the end of the third day, and

complete resolution by prolonged sleep at the commencement of the fifth day.

IV.—The best treatment, in my opinion, is—1st. Free purgation. 2nd. Nutritive spiced soup given cold as a drink from a basin or tumbler, and alternating with draughts of egg flip or other tonic and calmative nutriment. 3rd. Early in the morning cool sweet tea with two or three eggs beat up in it is very grateful to the patient, then much exhausted by the long exacerbation. 4th. Medicines, as Superphosphate of lime and decoction of Garlic, which act as stimulants to blood and tissue nutrition. 5th. Care should be taken to induce the patient occasionally to drink a sufficient quantity of cold tea or water, especially in perspiring cases, to replace the constant loss of fluid and encourage oxygenation and general depuration. In delirium tremens, as in low fevers, the patient does not speak of thirst, although requiring water very much; and the general irritability is often much increased merely by this want. If he refuse plain water, he will readily take water which has been colored by burned bread or by a few drops of compound tincture of lavander and presented clear and sparkling in a tumbler. Of course, the water should be given between meals.

V.—Complications although often of the greatest importance in determining the result of the case, are yet of secondary consideration in the treatment, so long as delirium tremens is present. Some complications as convulsions may be prevented by cool air, freedom from disturbance, purgatives, diluents and nutriment. Others, as moderate enlargement of the liver, occasioned by loss of tone of its nervous and organic fibres, yield to cool air, abstinence from spirits and persistent employment of good diet, followed by mineral tonics and occasional warm purgatives. More serious lesions of that organ or of the kidneys or other viscera, or unusal obesity, are almost certain to lead to a fatal result at an early period after delirium tremens appears; and, as in cases III and IX, the delirium, but for a knowledge of its antecedents, is sometimes not readily distinguishable from the ordinary delirium of the dying.

Art. VIII.—*Memorandum on Re-vaccination in the 44th Regiment, Madras Native Infantry.* By G. Mackay, M.D., &c., &c., Surgeon, Madras Army.

It is unnecessary to remark on the importance of vaccination, in a country where small-pox is known to be so very prevalent as in India. No one now doubts the efficacy of vaccination, but there is still a difference of opinion, with regard to the permanency of its beneficial influence, whether a child once successfully vaccinated, is protected for life, or only for a limited period. The latter is the opinion I am inclined to adopt, judging from the frequency with which I have found re-vaccination to succeed, both among children and adults. Re-vaccination has for some years been regularly practised in most of the Armies on the Continent of Europe, and has also been more lately introduced into the British army. The published reports of the British Army Medical Department for 1859, contain some interesting and valuable tables, giving the results of re-vaccination, and the practical value of it is very strongly shown, in the passages quoted from Mr. Simon's report to the General Board of Health in 1858. Mr. Simon states on the authority of Professor Heim that in Wirtemberg—

"During the five years, 1833—7, though small-pox infection had been sixteen times imported into different regiments of the army, there had ensued among the 14,384 re-vaccinated soldiers, only—in the person of one whose re-vaccination two years before had been followed by 'modified success'—a single instance of varioloid."

Again in the Russian army :—

"During the ten years preceding 1831, cases of post-vaccinal small-pox were increasing in number and fatality: attacks were counted annually by many hundreds, and within the three years, 1831—3, there had occurred no fewer than 312 deaths by small-pox. For the last 20 years the Russian army has represented an almost entirely re-vaccinated population. And what has been the contrast? 104 annual deaths by small-pox was the last experience of the former system; 2 annual deaths by small-pox has been the average for the re-vaccinated army. Analysing, moreover, the 40 fatal cases of small-pox which, during the last 20 years, have occurred in the Russian army, we find that only four of the number were persons who (it is said) had been successfully vaccinated."

Mention is also made in the same report, of the beneficial effects of re-vaccination in the Bavarian army, the Danish army and navy, and that similar satisfactory results have followed the same practice in Sweden.

These facts speak strongly in favor of the opinion that the protection from small-pox afforded by vaccination is not permanent, and show the great importance of re-vaccination. Under this impression I have lately adopted it in the Regiment under my Medical charge, and the results are given in the following tables.

TABLE I.

Regiment.	Total number vaccinated.	Degree of success of re-vaccination.	551 bore marks of previous small-pox, in these the result were.	152 bore good marks of previous vaccination, in these the results were.	22 bore doubtful marks of previous vaccination, in these the results were.	25 bore no marks of previous vaccination or small-pox, in these the results were.	
44th Regt. Madras N. I.	607	A perfect Vaccine Pustile in...	208	45	9	15	
		A Modified do. in ..	97	30	5	4	
		A Failure in	246	77	8	6	

TABLE II.

Regiment.	Total number vaccinated.	Degree of success of re-vaccination.	Of cases with marks of previous small-pox there were 551, among these the results per 1000 were.	Of cases with good marks of previous vaccination there were 152, among these the results per 1000 were.	Of cases with doubtful marks of previous vaccination there were 22, among these the results per 1000 were.	Of cases with no marks of previous vaccination or small pox there were 25 among these the results per 1000 were.	Total.
44th Regt. Madras N. I.	607	A perfect Vaccine Pustule in...	377·50	296·05	409·09	600·00	369·33
		A Modified do. in ..	176·04	197·37	227·27	160·00	181·33
		A Failure in	446·46	506·58	363·64	240·00	449·34
		Total.....	1000	1000	1000	1000	1000

It will be seen in the foregoing tables, that among 607 sepoys the large number of 551, or at the rate of 907 per 1,000, showed marks of having suffered from small-pox, only 122 of these showed good marks of previous vaccination—as sepoys are regularly vaccinated, it must be presumed that the majority of those who showed marks of small-pox, suffered from the disease in infancy, or at least previous to being enlisted, and that it was not considered necessary subsequently to vaccinate them. I have observed a similar prevalence of small-pox marks, among the native prisoners in a large jail in this country, and some idea may be formed from these figures, of what the fearful ravages of this disease must be among the native population in general.

Table II. shows that among those who presented good marks of previous vaccination, a perfect vaccine pustule was produced by re-vaccination in the proportion of 296·15 per 1,000. It must not be supposed that if these individuals had been exposed to the contagion of small-pox, they would have contracted the disease in the same proportion, for among those who bore marks of previous small-pox, re-vaccination was even more successful, yet we know that persons who have once had this disease are little liable to a second attack, but there can be no doubt that those in whom re-vaccination succeeded would have been more liable to suffer if exposed to the contagion than the others.

Inoculation of lymph (vaccine or variolous) is, as Mr. Simon states, a more delicate test of susceptibility to small-pox, than breathing an infected atmosphere, many persons when lymph is inserted in their skin, will show locally at least, evidences of its effects, though they would not have suffered from breathing an infected atmosphere.

Fifty-six of the men included in the above tables, stated that they had been vaccinated at their native villages, and showed a cicatrix on one or both forearms, circular or oval shaped, about a quarter of an inch in diameter, these were larger in size, but resembled the dark colored marks frequently seen on natives as the result of small-pox. Two of these men showed good marks, and one, doubtful marks of previous ordinary vaccination. (The others were entered as not having been vaccinated.) Forty three of them showed marks of having suffered from small-pox, and one had marks of small-pox and ordinary vaccination. Nine presented no

other marks than those of the native operation, of these four were vaccinated with perfect success, and in two the result was a modified vaccine pustule. The native operation does not seem to have afforded much protection, only thirteen out of the fifty-six cases having escaped small-pox, and two of the thirteen showed marks of having been vaccinated in the ordinary way.

The numbers in the foregoing tables are too few to justify any important practical conclusions being drawn from them, but they are offered as a small contribution to the statistics of this important subject, and in the hopes of attracting attention to it. A regular system of re-vaccination throughout the Native army, with a record of the dates on which it is performed on each individual, would in time lead to important results, and afford data for deciding the question as to how long the beneficial effect of the operation lasts.

PART II.

REVIEWS AND NOTICES OF BOOKS.

A Manual of Botany: including the Structure, Functions, Classification, Properties and Uses of Plants. By ROBERT BENTLEY, F.L.S., M.R.C.S.E., Professor of Botany, King's College, London, &c. Illustrated by nearly 1,200 Wood-cuts. London: JOHN CHURCHILL, New Burlington Street, 1861.

WITH the admirable introductory works on Botany of Lindley and Balfour in existence, there was no very apparent want of another. However, in books, as in many things else, a generous rivalry is wholesome; and, besides, Mr. Churchill's series of excellent Manuals would not have been complete, without a volume on so important a branch of medical study. It is strange, how little, generally speaking, medical men know of Botany, considering that so many articles of the Materia Medica are derived from the vegetable kingdom. Doubtless this in some measure depends on the brief period devoted in the medical curriculum to the study of so vast a subject, but chiefly we think on a wrong system of teaching, the student being led to think, that a knowledge of the minute structure and physiology of plants is what he ought chiefly to seek to acquire. We grant the importance of both these subjects; but what, we would ask, is the practical use in India or elsewhere of a mere abstract acquaintance with structure and functions? Will it enable us at a glance to recognise the natural order of a plant, and to predicate its properties? Most certainly not, as many could testify from sad experience. Besides we affirm, that the student of Botany must become acquainted with the characteristics of the natural orders, and the modifications of organs that each presents, ere he can appreciate the laws that govern the life, growth and reproduction of plants. Nature must be wooed in her favorite haunts, by those who wish to learn her secrets :—

> "The muse, nae poet ever fand her,
> "Till by himsel' he learn'd to wander,
> "Adown some trotting burn's meander
> An' no think lang."—*Burns.*

As with the poet so with the more practical student of Nature, he must cultivate a love for her in all her forms ; and no place will be to him a solitude, if it nourishes but a tiny blade of grass. It is only by constant communion that familiarity with the physiognomy of plants is gained, and that ardour kindled, which is essential to success in this as in every branch of science.

Our author has evidently similar views as to the proper method of teaching Botany, for he does not introduce the physiology of plants to the notice of his readers, until he has gone over the subjects of Organography and Systematic Botany. This arrangement is quite a novelty, but we consider it a great improvement on that of other introductory works, for nothing assists the student more in the first steps of a science, than a natural disposition of subjects. Indeed throughout the "Manual" we find that a clear, precise and natural arrangement prevails, and such method leads one to predicate favourably of the other qualities of a book. The preface opens with the statement, that the chief design of the author has been to furnish a practical and comprehensive guide to the Properties and Uses of Plants. This savours of the spirit of our utilitarian times, and for this reason alone, the work is likely to be popular. Emanating however, as it does, from a London Professor of Botany, we expected that full justice would also have been done to other branches of the subject more strictly botanical. We confess however we have in some measure been disappointed, for no notice is taken of *Descriptive, Fossil,* or *Geographical Botany ;* subjects of great interest to every man of liberal education, and very essential for the majority of students of medicine. The author gives a sort of apology by stating, that the "Manual" as it stands exceeds in bulk the desired limits, but we cannot accept this as a sufficient excuse ; and we think that, if stinted as to space, the large portion of the work devoted to Organography, might legitimately and advantageously have been curtailed to make room for subjects so important. There is also a great deficiency in the definition of botanical terms ; thus, for instance, we cannot find any explanation of the common terms *Discoid, Heterogamous, Heterocephalous, Radiate,* &c. This should not have been the case in an elementary work, for nothing is more perplexing to the student, when he has made a little progress in a science, than to find words continually occurring, of the

meaning of which he is ignorant. Not only should such words, the skeleton of the science, be fully explained, but the explanation should be so placed as to be easily found, and so rendered as to be easily grasped by the memory. The author refers us to the Index, which he says will serve as a Glossary, by turning up the page to which it refers; but of course the fault just noticed in the body of the work must render it correspondingly defective, and besides we do not find any references in it to a large amount of valuable information, that the "Manual" actually does contain.

Having thus freely spoken of the faults of Mr. Bentley's work, it affords us great pleasure to turn to its merits, which are neither small nor few.

And first as to the Wood-cuts, all of which (nearly 1,200,) have been executed by Mr. Bagg. Many of them are not original, but all appear to be from fresh blocks, and in the skill and fidelity that they display are, as works of art, beyond all praise. Truly Mr. Churchill is a liberal publisher, and eminently deserving of the support and gratitude of our profession, for the plums with which he invariably enriches the scientific pie.

The "Manual" does not profess to present us with any fresh discoveries, but merely to supply the student with a text-book on Botany, faithfully representing the existing state of the science. To enable him to do so, our author has consulted every trustworthy record of discovery up to the date of publication, and it is pleasant to have these gleanings served up to us in so clear a manner, and connected a shape. Although containing nothing absolutely new, still the following account of cell-formation may prove fresh to some of our readers, and serve to show the manner in which our author deals with facts.

"All cells originate in one of two ways: either free in the cavities of older cells, or at least in the protoplasmic fluid elaborated by their agency; or by the division of such cells. The first is called *free cell-formation*, the second *cell-division*.

"1. FREE CELL-FORMATION.—We distinguish two modifications of *free cell-formation*. 1. Free cell-formation from a nucleus or cytoblast; and 2, without the previous formation of a nucleus.

"1. *Free cell-formation from a nucleus.*

* * * * * *

"The manner in which it is supposed to take place is as follows:—A portion of the protoplasm collects into a more or less rounded or somewhat oval form, with a defined outer border, thus forming the nucleus of the cell; upon this a layer of protoplasm is deposited, which assumes the form of a membrane, and expands so as to form a vesicle; on the outside of this a cellulose membrane is secreted, and the formation of the cell is completed. The protoplasmic vesicle in this case forms the subsequent lining of the young cells, and constitutes the 'primordial utricle' of Mohl. This process of cell-formation is somewhat differently described by Henfrey thus:—'The new cell is formed by a portion of the parent primordial utricle separating itself from the rest of the protaplasm, assuming a globular or oval form, and secreting a cellulose membrane upon its surface, so as to form a new cell, lying free in the cavity of the parent primordial utricle.' The antecedent formation of a nucleus is not here alluded to, except the separated portion of the primordial utricle is to be regarded as such."

"In flowering plants, free cell formation only occurs in the embryo-sac, in which part both the germinal vesicles and the cells of the albumen (endo-sperm) originate according to this method. In the flowerless plants, it is regarded by some observers, as the mode by which the spores of Lichens, and some of the Algœ and Fungi, originate; by Henfrey and others, however, their formation is believed to be due to a modification of the process of cell-division."

"2. *Free cell-formation without a previous nucleus.*—In the process of free cell-formation, as described above, we have alluded to the production of the nucleus as the first step of the process, and it is regarded as such in most instances by far the greater number of observers. In some cases, however, no nucleus can be detected in a cell previous to the formation of other cells free in its cavity; hence it is quite clear that the presence of the nucleus cannot always be regarded as essential, but that the separation of a portion of protoplasm from the general mass, which takes place under such circumstances, must be capable of acting as one, and thus to cover itself with a membrane and form a cell. This, according to Mohl, frequently occurs in the formation of the spores of the Algæ, &c."

"2. CELL-DIVISION.—This mode of cell-formation is also called by authors *parietal cell-formation*, and *merismatic* or *fissiparous*. It may be treated of under two heads, namely: 1. *Cell-division without absorption of the walls of the parent cell;* and 2, *cell-division with absorption of the walls of the parent cell*, and *the setting free of the new cells.*"

"1. *Cell-division without absorption of the walls of the parent cell.*—This mode of cell-formation was first discovered by Mohl, whose opinions were afterwards ably supported by Henfrey and Mitscherlich. According to these physiologists, (and their obser-

vations have now been confirmed in all essential particulars by various subsequent observers,) this process is the one by which all vegetating or growing parts of plants, whether flowering or flowerless, are produced and increased;—all increase in the mass of the different organs is therefore due to its agency. The manner in which it takes place is as follows:—The primordial utricle or the protoplasmic lining of the cell becomes gradually constricted on all sides, thus folding inwards, and ultimately dividing by a kind of hour glass contraction the original primordial utricle and the contents of the cell within it into two distinct portions, each portion of the primordial utricle then secretes a layer of cellulose over its whole surface, and where these portions are in contact with the original wall of the primary cell, they only form new layers of thickening to it, but when separated from the wall, as is the case where the infolding takes place, they form distinct cellulose membranes, which will be, however, continuous with those layers of thickening. The original cell thus becomes divided into two; each of these then has the power of growing until it reaches the original size of its parent, and then either, or both, may again divide in a similar manner until the plant, or organ, of which they form a part, is completed."

"In some of the lower kinds of plants, a modification of this process of cell-division takes place; it consists in the formation of the secondary cells, as little bud-like prominences on the surface of the primary cells, either at their extremities, as in the Yeast plant, by which the plant is increased in length; or on the side of the primary cell when branches are produced, as in some confervæ; in the fibrilliform cells of Fungi and Lichens, and in other cases; probably much more frequently than is commonly supposed. The mode in which this budding occurs may be thus described. At a certain point the primordial utricle appears to acquire a special development, for it is seen to bulge out, carrying the cellulose wall of the cell before it, by which a little prominence is produced externally, this continues to elongate until it forms a tubular projection, on the side of the primary cell. The cavity of this projection is at first continuous with that of the cell from whence it sprung, but after it has acquired a certain definite length, its primordial utricle becomes constricted at the point of contact with the primary cell, and ultimately forms a partition between them, as in the ordinary process of cell-division. In some cases, as in the formation of the fibrilliform cells of Fungi and Lichens, no partitions are formed, but all the branches communicate with each other. This process of cell-division is termed gemmation or budding."

"2. *Cell-division with absorption of the parent cell, and the setting free of the new cells.*—The pollen cells in the anthres of all flowering plants, and the spores of most flowerless plants, are formed by

this process. The manner in which it commonly takes place in the formation of pollen, is as follows:—the primordial utricle of each parent cell becomes infolded as in ordinary cell-division, so as to divide it into four portions, either directly or indirectly by first dividing it into two, and then each of these being again divided into two others; these four portions are called *special parent cells;* the whole of the protoplasmic contents in each of these then secrete a layer of membrane on their outside, and we have thus four perfect cells formed in the cavity of their parent. As these continue to enlarge, the walls of the parent cells become in most cases absorbed, and the cells being thus set free, the process is completed."*

As instances of the rapid production of cells our author gives the *Protococcus nivalis,* which suddenly reddens the surface of Arctic snows; and mentions that a fungus, of the *Puffball* tribe, has grown from the size of a mere speck to that of a large gourd, in a single damp night. There is sometimes to be seen in India a fungus on the hills of the white ants, during the S. W. Monsoon, that grows with astonishing rapidity. It suddenly appears as a pasty layer, about ½ inch thick or more, and is found to consist of innumerable spores with mycelium, &c., covering the entire hill. We have not seen it in any other situation. In speaking of cotton, most people use the term fibres, which is wrong, as cotton does not consist of fibres but of hairs. Our author gives the following distinction between the fibres of the woody tissue of the *liber* and the hairs of cotton.

"Cotton may be readily distinguished under the microscope

* The theory of Cytogenesis here given is the orthodox one, of *omnis cellula e cellulâ.* Recently Prof. Bennett read, before the Royal Society of Edinburgh, a paper to show that real action, physical and vital, may reside in organic molecules, varying in size from the $\frac{1}{4000}$ of an inch, to a point hardly visible; the ultimate molecule being invisible to our highest microscopical powers. Molecules may be formed in two ways:—1st, By precipitation in fluids; yielding *histogenetic,* or molecules of formation. 2nd, By the disintegration of previously formed tissues; yielding *histolytic* or molecules of disintegration. Both kinds are shown to be governed by forces that induce a variety of movements, and cause them to combine in definite ways. The Professor then enunciates the doctrine *: That the development and growth of organic tissue is primarily owing to the successive formation of histogenetic and histolytic molecules.* Molecules (histogenetic) produce nuclei and cells, these become disintegrated to produce secondary molecules (hystolytic), which by a rearrangement become again histogenetic to form secondary nuclei and cells; and thus by a repetition of the process in various developments, the tissue or individual is formed. In short not only development, but growth, secretion, absorption and excretion are only different names for histogenetic and histolytic processes. This theory, as might have been expected from so sound a philosopher, does not countenance the doctrines of equivocal or spontaneous generation; neither is it opposed to a true cell theory of growth, but constitutes a wider generalisation, and broader basis for its operations.

from the various kinds of liber-cells already described, (*viz., Hemp, Flax, Sunn, Jute, Chinese Grass, &c.*) from the circumstance of its component cells collapsing when dry from not possessing any stiff thickening layers, so that it then resembles a flat band, more or less twisted, with thickened edges ; while liber-cells from containing thickening material in their interior, always maintain their original cylindrical forms and tapering extremities."

Speaking of the ages of trees our author mentions a *Wellingtonia gigantea* in California, which has reached the age of 3000 years, is 450 ft. in height and still in full vigour ! We have also some curious facts as to the size of trees ; thus the *Castanea vesca* of Mount Etna is 180 ft. in circumference, a *Platanus orientalis* near *Constantinople* 150 ft., and a specimen of *Wellingtonia gigantea* 116 ft. at the base. We remember an enormous Ash-tree. It grew at a distance of 30 yards or so from an ancient parish church, but had to be cut down, as a colony of rooks having taken up their abode amongst its branches, they kept up such a cawing during service, as completely to drown the voice of the clergyman. It took 8 or 10 big boys with arms extended to span this tree at its base. To those who are fond of the branches of science approaching the speculative, we would recommend a perusal of the chapters on Phyllotaxis and Morphology, in which an admirable digest is given of facts and opinions, new and old. With regard to Phyllotaxis it is remarked, that the arrangement of the leaves probably influences the form of the stem and branches.

"Thus, a certain amount of alternation commonly leads to a rounded form of stem : an opposite, or whorled arrangement, to an angular stem."

We think it likely, however, that as in point of time of development the leaves are subsequent to the stem, so in the matters of cause and effect the leaf arrangement will be the result, and not the cause of the configuration of the stem. A well known popular author* remarks that the forms of plants may be supposed to be " determined under the operation of a law in electricity, variously affecting them according to their organic character, or respective germinal constituents." With equal propriety and right might we pronounce electricity to be *the life* of the plant, and the functions of vegetation and reproduction to be merely elec-

* " Vestiges of the Natural History of Creation."

trical phenomena. In the part of the work devoted to the reproductive organs in Phanerogamia will be found much interesting matter; but which, as it contains nothing absolutely new, we cannot stop to notice. Then follows a delightful chapter on the reproductive organs of Cryptogamia, with admirable illustrations. Much has been done in recent years to elucidate the mysteries of reproduction in these, but even yet much remains to be accomplished. So rapid, however, is the march of discovery in these fields of research, that, although only a year has elapsed since the publication of the "Manual," still several alterations would now, in the event of a new edition, have to be made in the text. In confirmation of this statement we need only refer our readers to the pages of the "Quart. Journal of Micros. Science."

The next subject is "Systematic Botany," and the 1st chapter is devoted to the "General principles of Classification." We find it stated that there are about 125,000 species of plants known to exist in the world, but we fear this is considerably beyond the mark; for in all colonies like India, of which the Flora has been but imperfectly investigated, not hundreds but thousands of mere varieties have been elevated to the rank of species. Hooker and Thomson, in the Introductory Essay to their "Flora Indica," define its limits as embracing an area of nearly two millions of square miles; and yet they believe that not more than from 12 to 15,000 species are to be found in that immense portion of the earth's surface, proverbially fruitful in vegetable productions.

With regard to species our author remarks :—

"Species must be considered as permanent productions of Nature, which are capable of varying within certain limits, but in no cases capable of being altered so as to assume the characters of another species. There is not the slightest foundation for the theory, which has been advocated by some naturalists, of a transmutation of species."

In a foot note with reference to the views of Darwin and Wallace as to the nature of species and varieties, we find the following :—

"At present however, although fully admitting the very great ability with which these opinions have been supported, we must, until further evidence be adduced, adhere to the views above expressed, as to the nature of species and varieties."

We think this is the only light in which these ingenious

speculations can, at present, be regarded, by the cautious naturalist. We lately noticed, in a single field, some interesting variations in the conformation of the leaf of the Ipomœa pestigridis, illustrating the tendency of all varieties to revert to the original type. In the first or most abnormal variety the leaf was cordate at the base, slightly truncate at the apex, and 4-toothed; in the second the base was also cordate, but the apex was 6-toothed, and the indentations were deeper; in the third the leaf was 5-lobed, the two basilar lobes being very broad, and in the fourth there were six lobes, one of the basilar ones having given off the sixth lobe. The normal leaf is in general 7-lobed. Had we merely met with the first variety, and that at a distance from the normal plants, we might have been apt to regard it as a distinct species; but finding all the four varieties growing along with the ordinary plant, it at once became apparent that there was but one species; and we could, step by step, trace up the tendency of varieties to revert to the parental type. We are quite aware that these facts might be used to support the other side of the question, but until actual proof has been afforded of the transmutation of species, we deny the weight of any such interpretation. All present knowledge we possess tends to prove, that species are permanent productions of nature, and we must therefore, until the contrary has been proved, interpret every natural fact accordingly.* Discussing the merits of natural and artificial systems our author truly says, that the great aim of the Botanist should be to develope a true natural system. At the same time the most ingenious artificial system of Linnæus, now often spoken of and treated with contempt, is justly appreciated; its value as an Index to the Natural system and help to those prosecuting the study of Botany without the aid of a teacher, being duly pointed out. An extract bearing on the subject, from a Lecture of the late Prof. Edward Forbes, is given, from which we cannot help making the following quotations:—

"Those who slightingly think of the Linnæan system, forget in the present to look back fully and fairly on the past. They should remind themselves of the state in which Botany was, when Linnæus

* How many idle discussions and errors would be avoided, were it always remembered;—"that, though it be one of the maxims of the true philosophy, never to shrink from a doctrine which has evidence on its side, it is another maxim, equally essential to it, never to harbour any doctrine when this evidence is wanting."—*Chalmers' Astronom. Lectures.*

undertook to make its treasures consultable. The understanding of things depends greatly on the perception of their order and relations. When that order and those relations require deep study ere we can comprehend them clearly, the man who gives us a clue, however insignificant it may be in its own nature, is not only conferring on us an invaluable benefit, but endowing the despised instrument with golden value. Such a clue did Linnæus give when he put forth the artificial system."—"An easy means of acquiring and arranging information is a great help to the workmen of science; and no department has gained more thereby than Botany, which, through the facilities afforded by the artificial method devised by Linnæus, has had its facts amassed in enormous quantity for the use of its more philosophic votaries, and owes its present advanced state, in a great measure, to such humble means."—"The clue to the labyrinth, then, having served such a noble purpose, becomes a consecrated object, and should rather be hung up in the temple than thrown aside with ignominy. The traveller, returning from his adventurous and perilous journey of discovery, hangs up his knapsack with affection on the wall of his study, but travellers must return to the fields if more is to be done—and so must botanists; and each must have recourse again and again, to those helps which aided them so well in their earliest journies."

The arrangement of the natural orders is admirable, being judiciously derived from the systems of Jussieu, De Candolle, and Lindley,—that of De Candolle being the basis. The following scheme that we have prepared will show the chief features of the system thus compounded.

- Sub-Kingdom 1. Phanerogamia.
  - Class 1. Dicotyledones.
    - Division 1. Angiospermia.
      - Sub-Class 1. Thalamifloræ.
      - Sub-Class 2. Calycifloræ. — 1. Perigynæ, 2. Epigynæ.
      - Sub-Class 3. Corollifloræ. — 1. Epigynæ, 2. Hypostamineæ, 3. Epipetalæ.
      - Sub-Class 4. Monochlamydæ.
    - Division 2. Gymnospermia.
  - Class 2. Monocotyledones.
    - Sub-Class 1. Dictyogenæ.
    - Sub-Class 2. Petaloideæ. — 1. Epigynæ, 2. Hypogynæ, 3. Diclines.
    - Sub-Class 3. Glumaceæ.
- Sub-Kingdom 2. Cryptogamia.
  - Class 3. Acotyledones.
    - Sub Class 1. Acrogenæ.
    - Sub-Class 2. Thallogenæ.

The characters of the natural orders and their affinities appear to have been chiefly derived from that great Thesaurus of botanical lore, "Lindley's Vegetable Kingdom." We think that, in some respects, a less fanciful leader might

have been followed with advantage; although we entertain the highest respect for him, the most profound of English Botanists. The notice of each Natural Order is given under the following heads:—1. General Character; 2. Diagnosis; 3. Distribution and Numbers; 4. Properties and Uses. We have also at the conclusion of each sub-class, an artificial analysis of its natural orders, which cannot fail greatly to assist the student in ascertaining the order to which a plant belongs. We suspect, however, the notices of the properties and uses of the principal plants of each natural order, will be the most generally and highly appreciated portions of the "Manual;" and we are glad to see that the products of India and the East have received due attention. As examples of these admirable descriptions, we extract notices of THEA, PINUS and COCA:—

"THEA.—From the leaves of two or more species or varieties of this genus, the tea which is so extensively used in this and some other countries is prepared. Two species are natives of China, namely, *Thea Bohea* and *T. viridis*, from which China tea is obtained. Another species, *Thea Assamica*, furnishes Assam Tea. There is considerable doubt, however, whether these should be considered distinct species, or only varieties of one, owing their differences to soil, climate, mode of cultivation, &c. It was formerly supposed, that Black Teas could only be obtained from *T. Bohea* or *T. viridis*, but Mr. Fortune and others have proved, that both Black and Green Teas may be made indifferently from either *T. Bohea* or *T. viridis*, the differences between such teas depending, partly, on the species or variety of plant from which the leaves have been obtained, but more particularly from the time of gathering, and mode of preparation. Thus, Green Teas, are generally prepared by drying the young leaves as quickly as possible after they are gathered; then slightly heating them, after which they are rolled separately or in small heaps, and then dried as quickly as possible; while Black Teas are usually made from the older leaves, which after being gathered, are exposed to the air for some time; and then, and after having been tossed about, are placed in heaps, where they undergo a kind of fermentation; after which they are exposed to a fire for a short time; then rolled in masses to get rid of the moisture, and to give them a twisted character; after which they are again exposed to the air, and finally dried slowly over a fire. Thus Green Tea consists of the young leaves quickly dried after gathering, so that their colour, &c., is preserved, and Black Tea is the older leaves dried some time after being gathered, and after they have undergone a kind of fermentation, by which their original green colour is changed to black as well as other important changes produced. Several varieties of Black and Green Teas are known in commerce. Thus of

the former, we have Bohea, Congou, Souchong, Pekoe, Caper, &c., of the latter, Hyson Hyson-skin, Twankey, Imperial Gunpowder, &c. The finer varieties of tea, are prepared from *T. viridis*. Some teas have a peculiar odour, somewhat resembling the flowers of the common cowslip ; this is produced by mixing with them the dried flowers of the sweet-scented olive (*Olea fragrans*). Other teas are scented with the dried flowers of *Chloranthus inconspicuus, Aglaia odorata, &c.*"

"The cultivation of the Tea-plant is now being carried on with success by the East Indian Government in certain districts of the Himalayas. A large quantity of Black Tea is now also obtained from Assam. China, however, is the great tea-producing country ; in that part of the world 3,500,000 acres of ground are devoted to it alone and the total produce in 1852, according to Johnston, was 1,000,000 tons, or 2,240 millions of pounds. In the United Kingdom the consumption of tea annually is nearly 60 millions of pounds or about 26,000 tons, being at the rate of about 2 lbs. per head of the population. Tea owes its chief properties to the presence of a volatile oil, tannin, and an alkaloid called *theine ;* which is identical with Caffeine, the alkaloid contained in coffee, and *guaranine*, the alkaloid of Guarana ;* and closely allied to *theobromine*, the alkaloid of cocoa seeds. Tea-leaves also contain about 6 per cent. of gluten, but this is scarcely extracted in any amount by the ordinary mode of making tea. It has been recently proved that tea, besides its stimulating and soothing effects, is indirectly nutritive, that is to say the theine it contains has the effect of preventing the waste and decay of the body, and any substance that does this necessarily saves food, and is thus indirectly nutritive."†

"Pinus.—Several species of this genus are valuable timber trees; as *P. sylvestris*, the Scotch Fir, which yields the timber known as Dantzic or Riga Fir, and Russian Deal ; *P. strobus*, the White Pine or Deal of the United States ; *P. mitis* and *P. palustris*, the Yellow Pine or Deal ; *P. rigida*, and *P. Lambertiana*, &c., &c. The wood of these trees is used to an enormous extent in this country and elsewhere. *Pinus sylvestris*, the Wild Pine, or Scotch Fir, is the source of common turpentine ; this yields by distillation an essential oil called *oil of turpentine*, or *spirits* or *essence of turpentine*, and Yellow and Black resin. The wood also yields by destructive

* The Paullinia sorbilis of Brazil. The seeds are made into cakes and largely used as a beverage, like cocoa or chocolate, in that country.

† Recent inquiries are at variance with this generally received theory, as to the action of Tea. Its essential action is, it would appear, to promote all vital actions and to increase the action of the skin. "Hence it increases the assimilation of food, both of the flesh and heat forming kinds, and with abundance of food it must promote nutrition, while in the absence of sufficient food it increases the waste of the body." See paper by Dr. E. Smith, in "Journ. of Soc. of Arts," Feby. 15th, 1862.

distillation, *wood tar*, and *pitch*. The inner bark of the Scotch Fir is used in Norway for making bark bread. From the leaves also of this species the substance called Pine-wool or Fir-wool is prepared. It is used for stuffing mattresses, &c. It is said to be repulsive to vermin. An oily substance called fir wool oil or fir wool spirit, has also been recently introduced into this country from Germany, and recommended for external use in Rheumatism, Neuralgia, &c. *P. Pinaster* of Lambert, the P. maritima of De Candolle, the Cluster Pine, yields Bordeaux Turpentine, Galipot tar, and pitch. *P. palustris*, the Swamp Pine or Long-leaved Pine, 'furnishes by far the greater proportion of turpentine, tar, &c., consumed in the United States, or sent from thence to other countries.' P. Tæda, the frankincense pine, also yields turpentine. *P. Pinea*, the stone pine, has edible seeds, which are used as a dessert under the name of *pine-nuts*. *P. Cembra*, the Siberian stone pine, has also edible seeds. The young shoots yield by distillation the so-called Carpathian balsam. *P. Pumilis*, the Mugho or mountain pine, yields by spontaneous exudation an oleo-resin called Hungarian balsam. *P. Geradiana*, found in Thibet and Affghanistan, yields edible seeds. *P. longifolia*, an Himalayan species, according to Royle, yields a very fine turpentine."

"ERYTHROXYLON COCA.—The leaves of this plant are much used by the natives of Peru, and some other parts of South America, as a masticatory; for which purpose they are always taken with a very small quantity of an alkaline paste prepared from the ashes of different plants; or in some cases, lime is substituted. The Peruvian Indians have always ascribed to the coca, the most extraordinary virtues. Thus, they believe that it lessens the desire and the necessity for ordinary food, and in fact, that it may be considered almost a substitute for food. Spruce says, that an Indian with a chew of Ipadú (the native name for Coca of the Indians of the Rio Negro) in his cheek, will go two or three days without food, and without feeling any desire to sleep. Dr. Weddell, however, speaks far less highly of the virtues of coca. He states that it does not satisfy the appetite, but it merely enables those who chew it to support abstinence for a length of time without a feeling of weakness or hunger. The use of coca is also said to prevent the difficulty of respiration which is generally experienced in ascending long and steep mountains. Its excessive use is also said to be very injurious, producing analogous effects to those occasioned by the immoderate use of opium and fermented liquors. It has been computed by Johnston, that the annual consumption of coca is 30,000,000 lbs., and that its chewing is indulged in by about 10,000,000 of the human race. The nature of the constituents, which thus give rise to the peculiar stimulating, hunger-allaying, and narcotic effects of Coca, have not been satisfactorily determined."

Passing on to Cryptogamia we observe that the Diatomaceæ and the Desmidicæ, concerning the true nature of which so many tough scientific battles have been fought, are placed under the Algæ, the Diatomaceæ being regarded as a *sub-order*, and the Desmidicæ as a *tribe* of the *sub-order*. This is essentially the arrangement of Lindley. Under the order Fungi we find the following characters, for distinguishing edible from poisonous mushrooms :—

"Edible Mushrooms.

1. Grow solitary, in dry airy places.
2. Generally white or brownish.
3. Have a compact brittle flesh.
4. Do not change colour, when cut by the action of the air.
5. Juice watery.
6. Odour agreeable.
7. Taste not bitter, acrid, salt, or astringent."

"Poisonous Mushrooms.

1. Grow in clusters, in woods, and dark damp places.
2. Usually with bright colours.
3. Flesh tough, soft, and watery.
4. Acquire a brown, green, or blue tint, when cut and exposed to the air.
5. Juice often milky.
6. Odour commonly powerful and disagreeable.
7. Have an acrid, astringent, acid, salt, or bitter taste."

Although at certain seasons edible mushrooms are very common in India, still they have never been much sought after by our countrymen. In Italy they are very highly prized, and Rome has its *Inspector of Funguses !*

The concluding portion of the "Manual" is devoted to the Physiology of Plants. Speaking of the functions of epidermal tissue, our author states it as his opinion, that it and its appendages have the power of absorbing at least watery vapour. In India the cultivator in many instances depends almost entirely on the watery vapour of the atmosphere; liberated during the cool nights, for the nourishment of his crops; and every one must have observed how fresh, after a dewy night, the leaves of succulent plants look, that were drooping and parched on the previous evening. Such

effects evidently take place, where the dew has not been sufficient, as it rarely is, to soak the soil and reach the roots of plants. With regard to absorption by the root, we find the following remarks :—

"The simple fact, however, which is easily proved by chemical analysis that the ashes of different plants contain different substances, or in different proportions, seems to me to prove incontestably, that roots have a power of selecting their food. In using the term *selecting*, however, we do not intend to imply that roots have any inherent vital power of selection resembling animal volition, but only to express the result produced by virtue of the mutual actions of the root and the substances which surround it in the soil. This power or property of selection is without doubt due to some obscure, and at present but little understood molecular relation, which exists between the membranes of the cells of different plants and the substances which are taken up or rejected by them, by which different roots acquire different endosmotic action for the same substances, while those of the same plant, in like manner, possess a varying endosmotic action for different substances."

Such a power of selection is closely recognised by the practical Farmer, who knows, that by cultivating the same crop year after year in one place, the soil gets so exhausted, as to yield a very poor return; whereas if another plant be put into the same ground, a good crop will be secured. It is on this principle that the *rotation of crops*, first taught by experience and now explained by science, proceeds. With regard to transpiration it is shown, that light is the main agent in influencing and modifying the process, the amount varying according to the intensity of solar light. The quantity of watery vapour thus exhaled is immense, a sun flower 3½ feet high and weighing 3 lbs. having been found to give off about 20 ounces of fluid in the day. With regard to the influence in this respect of trees in climate, we have the following most important remarks:—

"If such a large amount of fluid be thus given off by single plants, what an enormous and almost incalculable quantity must be exhaled by the whole vegetation of the globe, and it is in this manner that a large supply of moisture is constantly thrown off into the atmosphere; and hence we can readily understand one cause which leads to the difference between the air of a thickly wooded country and that in which vegetation is more or less scanty, for the former will be always in a damp condition, while the latter will be comparatively free from humidity. Thus, we see that a country to be perfectly healthy, should have the proportion

of plants to a particular area carefully considered, for while, on the one hand, too many plants are generally prejudicial to health by the dampness they produce; on the other, a deficiency or want of them, will produce an equally injurious dryness. The same circumstances have an important bearing upon the fertility or otherwise, of the soil, and thus hence an indirect influence upon the health of the inhabitants. Thus, it is a fact, that as vapour is constantly given off by plants, rain is more abundant in those regions which are freely supplied with forests, than in those which are comparatively free from them, and we find accordingly, that a great change may be produced in the climate of a country by clearing it of forests, for while an excessive amount of vegetation is injurious to the healthy growth of plants, if the country be deprived of them, it will become entirely barren from its extreme dryness. By inattention to these simple but most important facts which clearly indicate, that open land and that furnished with plants should be properly proportioned the one to the other, many regions of the globe which were formerly remarkable for their fertility, are now barren wastes; and in like manner, many districts formerly noted for their salubrity, have become almost, or quite uninhabitable."

In various parts of India, we believe, the effects of an indiscriminate clearing away of forest, to make room for Coffee, are beginning to be felt in a diminution of the rain fall.

Plants have also important relations to the atmosphere by their leaves, which are constantly absorbing from it or exhaling certain gases. According to our author the green parts of plants under the influence of solar light give off oxygen, which is derived by the decomposition of absorbed carbonic acid, in the cells immediately under the epidermal ones. The evolution by night of carbonic acid, is extremely small as compared with the opposite change by day, and our author considers the constant exhalation of carbonic acid by night and day as very doubtful. Plants are thus Nature's alembics for the manufacture of the oxygen, constantly abstracted by respiration, combustion, and oxidation from the atmosphere; in which its presence is absolutely essential, for the existence of animal life.

"Hence we see the importance again, in our sanitary arrangements, of bearing in mind these effects of plants; for we are taught by them, that it is absolutely necessary, if we desire to maintain a large town in a healthy state, to set apart large areas and plant them freely, for by such means, we not only maintain the purity of the air, but also, at the same time, afford spaces for exercise and recreation."

There is much of similar matter that we cannot afford space to notice, and for which we would refer our readers to the pages of the "Manual." We have glanced at its chief features, and can safely recommend it as an admirable guide to the student of Botany, being an able and accurate exposition of the principles of the science.

A System of Surgery, Theoretical and Practical, in Treatises by Various Authors. Edited by T. HOLMES, M.A., Cantab. Assistant Surgeon to St. George's Hospital, and Surgeon to the Hospital for Sick Children. In Four Volumes. Vol. III. *Operative Surgery; Diseases of the Organs of Special Sense, Respiration, Circulation, Locomotion, and Innervation.* London: PARKER, SON, and BOURN, West Strand. 1862. 8vo., pp. 916.

A PREFACE to this Volume affords the following statement:—

"In treating of Operative Surgery, it was thought inexpedient to offer a complete separate treatise on the whole subject; since, if that plan had been followed, a great part of the matter of such treatise must necessarily have been repeated in treating of the diseases of the organs on which the operations are practised. The subject of Minor Surgery has, therefore, been treated at such a length as seemed practically useful; then the greater operations are illustrated by a description of the various amputations, and an Essay on Anæsthesia; and finally the Principles of Plastic Surgery are explained and illustrated by the description of such operations as could be conveniently separated from that of the lesions for which they are practised. The Editor is aware that some amount of confusion is produced by this arrangement while the work is unfinished; but he trusts that the Index which will accompany the concluding Volume will obviate such confusion in the completed work, and enable the reader to find at once the place at which any operation is described."

We have given the above extract, partly to save ourselves the trouble of entering upon an explanation of the disposition of the contents of this Volume; and partly to shew that the Editor is fully aware of the amount of confusion almost necessarily attendant upon the piecemeal publication of a work the production of various authors, and also of the necessity of making arrangements for facilitating reference, and of providing every means for over-coming, as much as

possible, the inconvenience inseparable from a work of this character. For ourselves we must own that we have so high an opinion of the excellence of Mr. Holmes' System of Surgery, and of the thorough trustworthiness of the descriptions of disease and of the rules for treatment therein given, that we are perfectly willing to accept the inconvenience as a matter of very light moment.

This volume opens with an Essay on *Minor Surgery*, contributed by Mr. Thomas Smith, Assistant Surgeon to the Hospital for Sick Children. This article occupies but 50 pages, but all requisite information is afforded, and it is brought down to the most recent date. It is illustrated by sixteen wood-cuts, none of them presenting any great novelty. Of course, Surgically speaking, an article of this kind must be elementary in its character, but there are several matters detailed, want of due attention to which might mar the reputation of the most skilful surgeon. The directions for the applications of sutures are minute and most judicious. Our experience would lead us to say that very frequently the successful healing of wounds with the least possible amount of scar, is hindered from want of attention to such directions. Mr. Smith acknowledges that Dr. Marion Sims was the first to use Metallic Sutures *in America;* but says that:—

"Dr. Sims' claims to priority had, however, been anticipated (at least so far as the principle involved was concerned) some two hundred years before by Fabricius ab Aquapendente, who, writing in 1647, refers to the imperfections of the materials for suture at that time in use, namely, that they excited irritation, produced discharge, and easily ulcerated out. As a substitute, he recommends brass or iron wire sharpened at one extremity and annealed elsewhere, thus forming both needle and suture of one continuous piece of metal. Again, in our own country, in the year 1834, Mr. Gossett successfully treated a case of vesico-vaginal fistula by silver gilt wire sutures, and curiously enough, adopted the same position for the patient that is now found most convenient for the performance of the operation; a position, the advantages of which Dr. Marion Sims professes to have been the first to discover."

However suitable for the pages of a periodical publication discussions as to priority of claim to invention may be, we think they are out of place in the body of a special scientific work, and we consider that it is questionable taste on the part of Mr. Smith to have introduced the above sentences into his essay.

To show that Mr. Smith has fully carried out the Editor's idea with reference to his treatise we need only notice the headings of the sections. They are; Bandages and their Application; Immoveable Apparatus, such as Gum and Chalk Bandage, Gypsum Bandage, Gutta-percha, Pasteboard and Leather Splints; Sutures and their Application; Counter-irritation; Endermic and Hypodermic Medication; Acu-puncture; Electro-puncture; Blood-letting; Caustics, including the Galvanic Cautery; and Strangulation of Nævi and other Tumours.

Mr. Lister of Glasgow occupies 40 pages in discussing the subject of *Amputation.* He gives a *History,* in which he traces the successive improvements which have been made in this department of Surgery. He notices the eras marked by the application of ligatures to vessels, the discovery of the tourniquet and of anæsthesia. He considers Mr. Symes' modified circular amputation to be a vast improvement on the double flap method, and he can testify, from considerable experience, to the sufficiency of the covering which it affords to the bone, not only in the leg, but also in the lower part of the thigh. Mr. Lister does not recommend Mr. Teale's method of operating by a long and a short rectangular flap, because, although well adapted to afford a good cushion at the end of the stump, it has certain drawbacks, the chief of which is, a necessity for high division of the bone, especially in muscular subjects, and a consequent increase to the risk, which is always greater the nearer the seat of amputation is to the trunk. He suggests the following procedure, which, he feels satisfied, will attain all the essential objects of Mr. Teale's plan, and occupy much less time. He would curtail the length which Mr. Teale gives to the anterior flap, and round its edges, and

"In order to compensate for the diminution of the anterior flap, a posterior one must be made of rather more than half its length, and of rounded-shape for adaptation to it, and the integument of this flap should be dissected up before the posterior muscles are divided, so as to set it free from the effects of their contraction. On the other hand, the anterior flap, after being marked out by carrying the knife through the skin and fat, should be raised so as to contain a good deal of muscle, which will be useful, both by insuring the vitality of the rather long flap, and also by increasing the thickness of the cushion below the bone; while any tendency to retraction that it possesses (small compared to that of the posterior muscles) will be counteracted by the force of gravity, through which it will naturally tend to occupy its proper place."

Some very judicious remarks are made upon the dressing of stumps. Mr. Liston to the last continued a practice which Mr. Syme at first suggested, viz., leaving the wound open for some hours before the final dressing. But Mr. Syme afterwards found that, except in cases of extensive oozing from minute vessels, the disturbance of the wound involved in this plan was an unnecessary infliction on the patient, for provided the arteries are properly secured, the risk of secondary hæmorrhage (the avoidance of which was the object of leaving the stump open) is very small. We believe that the immediate closing of the wound is the plan universally followed now in all the large London hospitals. The application of straps of plaster is not recommended by Mr. Lister; stitches are preferable, for they occupy less room, and so oppose less obstacle to the escape of discharge, and now that we have a material for sutures which causes no irritation, the only objection ever urged against them has been removed.

Rules for the performance of particular amputations follow. We will merely refer here to Mr. Syme's operation at the ankle joint, which Mr. Lister says, is calculated to supersede entirely that of Chopart, for the parts likely to originate carious disease are completely got rid of; and it will also take the place of amputation of the leg in the majority of cases formerly supposed to demand it. The operation of Professor Pirogoff is unfavourably mentioned; it has the disadvantage of directing towards the ground the thin skin of the back of the heel instead of the thick cushion of the sole; while the increased length of the stump is objectionable as not affording sufficient space for the application of an artificial foot.

Those who have performed each of these operations will have found two certain advantages attendant upon Pirogoff's method; first, the amputation is more quickly executed, and secondly, the stump heals more rapidly than in Syme's operation. But upon the whole we agree with Mr. Lister that a preference must be given to the latter, and for the reasons he names. The stump afforded by this process is a perfect stump, a fine, firm but somewhat elastic cushion, with an integument adapted to bear considerable friction and pressure.

Mr. Lister recommends amputation immediately above the ankle in cases which do not admit of Syme's operation,

in preference to that at "the Seat of Election," a little below the knee, for the longer stump gives greater command over the artificial limb, and the operation involves less risk to life.

The next essay, that on *Anæsthetics*, is also contributed by Mr. Lister. Although the subject may be said to be somewhat hackneyed, yet there is a great deal of originality in this article. The author first points out the great advantage to the Surgeon of the effects of chloroform. The suspension of the functions of the nervous centres takes place in a certain order; first of the brain, loss of power of sensation and voluntary motion; next of the spinal cord, the reflex functions of the cerebro-spinal axis are abolished so far as concerns the voluntary muscles; but the parts concerned in the respiratory movements remain active, and the same is the case with the sympathetic ganglia of the heart.

Mr. Lister notices the occurrence of death under chloroform. He considers this event to be so rare that the use of chloroform is practically free from risk, for Mr. Syme has given it about five thousand times without ever meeting with a death, and he believes Dr. Simpson's experience, also very extensive, has been equally satisfactory. He then asks the question, How are the fatal cases to be accounted for? Heart-disease has been supposed to be a common cause of them. And it happens that the only case of death under chloroform which Mr. Lister ever witnessed occurred in a man whose heart proved, on examination, to be extensively affected with fatty degeneration. Here the chloroform was not given as fully as usual. A start was observed at the moment the knife was applied, and the patient was dead. Mr. Lister considers that death was "a consequence of the shock of the operation acting on a diseased heart;" and his impression was that, as the start of the patient proved that reflex action was not abolished in the voluntary muscles, and therefore the chloroform was imperfectly given, had it but been pushed to the usual degree, the fatal result might have been averted.

From this it will be seen that Mr. Lister considers that chloroform, by preventing shock and mental effort during the operation and anxiety before it, is in reality a great source of safety in heart-disease. We have not space at our command to follow Mr. Lister through all his argument,

but we can assure our readers that this article will afford them ample matter for reflection, especially those parts of it which contain the author's personal investigation into the effects of pulling forward the tongue when stertorous breathing has occurred. As to the real cause of death from the administration of chloroform Mr. Lister believes that it will be found that in every instance an overdose of the anæsthetic has been given; the attention of the administrator is too much directed to the pulse to the neglect of the respiration, for if the latter goes on freely and perfectly unobstructed every element of danger is removed.

The next article is furnished by Mr. Holmes Coote, and is entitled *Plastic Surgery*. It opens with a history of the origin of the plastic art three centuries ago under Gasparo Talliacozzi, and this certainly reads much more like the commencement of one of James's novels than that of any scientific essay with which we are acquainted.

Surgically considered, the article is reliable. Mr. Coote is by no means reticent as regards authorities, but we think he might have extended his reading a little, and had he travelled a short distance westward he would have gained the advantage of some hints about hair-lip operations, admirably but somewhat Irishly described by Mr. Butcher in the Dublin Quarterly Journal, during the past two or three years.

We entirely agree with the author as to the treatment of contracted cicatrices, and we think, with him, that "it may be laid down as a rule almost without exception, *that a cicatrix should never be touched with the knife.*" In the early days of our practice we have been sorely tempted and have yielded so far as to divide tense cicatrices in the hope their edges would retract, and amendment would ensue; but in the two instances in which we practised it the results were so very unsatisfactory that we have never essayed it since. Mr. Coote is an advocate of gentle yet constant extension in the severer cases, and pressure by elastic material in the slighter cases. Any one who has witnessed the practice at the Orthopædic hospital in Bloomsbury Square must be convinced of the great advantage which results from these modes of treatment, and probably, like the present writer, will have been struck with the very great ingenuity displayed in the adaptation of suitable extending apparatus.

"When gentle yet constant traction is exerted on a hard and

contracted cicatrix, it yields, without tearing, with singular facility; the hard knots disappear, the firm seams become soft and pliant, and the new skin regains the suppleness, though not the completeness, of the natural structure. After extension has been kept up a sufficient length of time, the material on which the contracting power depends becomes absorbed, and the elongation of the cicatrix is permanent."

Mr. Coote promises that, in an appendix, under the head "Surgical Apparatus," the details of the instruments he recommends shall be given.

Mr. James Hinton has been selected as the author of the essay on *Diseases of the Ear.* Mr. Toynbee has been for so many years associated with the scientific exposition of these affections, that we fully expected to find that this article was contributed by him, but Mr. Hinton has also carefully studied the subject, and presents us with a very well arranged and carefully written essay.

This subject is generally looked upon as a speciality, and we can remember that had it not been for our own efforts in seeking information upon it, independent of our medical *alma mater*, we should have failed to have obtained any knowledge of aural surgery, for it was very cursorily treated by our Professor of Surgery. There is nothing in Mr. Hinton's article which calls for special notice; it appears to be a careful statement of the present condition of this branch of surgery.

Diseases of the Nose, are treated of, by Mr. A. Ure, in an essay, occupying 35 pages. We extract a notice of what we cannot but consider a rare affection, although it is reported that "numerous cases" have been detailed.

"*Calculous concretions, rhinolithes,* occasionally form in the nasal cavities, and increase indefinitely by the addition of new layers, which are progressively deposited on their surface. Bartholin relates the case of a young Danish female, who, after suffering long from headache, voided from the nose several calculi, of the size and shape of a date. Clauder witnessed the case of a woman, sixty years of age, of a catarrhal constitution, where a rounded concretion, very hard, of the size of a hazel-nut, was thus evacuated. Khern, in like manner, noticed several pisiform calculi, which had escaped from the nostrils of a young person labouring under violent cephalalgia. Numerous other cases are referred to in an elaborate memoir on the subject, by M. Demarquay, in the 8th Volume of the *Archives Générales de Médecine.* These concretions are usually met with in the lower meatus. They may originate in the frontal

sinus, or in the maxillary sinus, and thence pass into the nostril. They vary in size, and may attain such dimensions as to block up the nares, and cause deviation or partial destruction of the septum. They present an uneven surface, and are of a black, grey or white aspect. They are found to consist of phosphate of lime, carbonate of lime, magnesia, and mucus. The nucleus is sometimes an extraneous body, as a cherry-stone, or portion of a tooth. The cause of their formation is, however, often obscure. Gräfe attributed their production to the influence of an arthritic dyscrasy. Chronic inflammation of the nasal fossæ and of the lachrymal gland may determine such an alteration in the secretions as to lead to calculous deposition. Certain anatomical conditions, moreover, may conduce, such as a straightening of the nares, or of the lower meatus, which may hinder the due expulsion of the proper secretion. The most frequent cause, on the whole, is the presence of a foreign body entangled in the cavity."

The symptoms and treatment are shortly explained.

Mr. Ure speaking of active spontaneous hæmorrhage from the nose says :—

"In active hæmorrhage it has been recommended when the blood flows from one nostril to elevate the corresponding arm in a vertical position ; and when it flows from both nostrils, to elevate both arms. The propelling force of the heart is thus distributed, because, having to urge a column of blood up the arteries of the arms, it must act with less momentum on the carotids. I have seen the plan successful."

We can assure our readers it is well worthy of a trial, for, though we have known it to fail, it has succeeded in our hands so often that we invariably put it in practice when a case of active spontaneous epistaxis comes before us. We remember that the first occasion upon which this plan was brought to our notice was in a review of the work in which it was strongly recommended. We forget the title and the name of the author of the book and also of the Journal which reviewed it, but we have a recollection that there was an addendum to the proposed elevation of the arm, corresponding to the nostril from which the hæmorrhage occurred, viz., compression of the nostril by the fore finger of the hand opposite. The reviewer ridiculed the proceeding, and said he presumed that when hæmorrhage occurred from both nostrils, both arms are to be elevated and the nostrils compressed by the great toes! Notwithstanding the ridicule we tried it shortly afterwards, and, as before said, with a favorable result.

The late Mr. H. Gray contributed the essay on *Diseases of the Larynx.* As originally written it contained notes on the laryngoscope, but these were so fragmentary that, after his death, it was deemed, best to omit them altogether and entrust this subject to Mr. A. Durham. Mr. Gray's article has been carefully revised by the editor and it is a very reliable one ; but we think that Dr. Todd's lecture on Erysipelatous laryngitis might have been advantageously drawn upon, for the account of this formidable affection is to say the least meagre.

Mr. Durham's notice of the laryngoscope is short but sufficient. The author is enthusiastic concerning the benefits to be derived from its skilful use. He says :—

"In conclusion, it is frequently asserted that the laryngoscope is not adapted for general use, but must remain in the hands of the few. It may or may not be so. I can only repeat my conviction, that, even in the hands of the few, this simple but beautiful contrivance is destined to do much good to the many."

We must own that we have no practical acquaintance with the laryngoscope, but we remember the enthusiasm of the late Mr. Avery who, many years ago, showed us his rather complicated instruments, which he considered capable of effecting wonders in the display of the actual condition of the fauces and larynx.

Mr. Charles H. Moore furnishes a very well written essay on *Diseases of the Absorbents.* We have nothing to notice here except that the deliberate removal by the knife of strumous or merely enlarged glands is, in our opinion, very properly deprecated. In fact Mr. Moore says that it is long since Surgeons have given up the practice, for, when undertaken, it was found to be of a formidable character, the operation was often abandoned before it was completed, and rarely had any issue but that of early death by the development of phthisis in the lungs.

Diseases of Veins are scientifically treated of by Mr. Callender, and we then come to one of the most carefully arranged essays in this volume. This is upon *Diseases of Arteries,* and it has a three-fold origin. Mr. Moore treats of *Atheroma and Obstruction of the Arteries,* and *Aneurism* is discoursed about by Messrs. Holmes and E. A. Hart, each gentleman writing independently upon particular divisions of the subject. Thus Mr. Holmes commences with the pathology, symptoms and treatment in general. Mr.

Hart then gives a notice of treatment by digital pressure. Mr. Holmes says a few words about treatment by flexion, and next Mr. Hart takes up treatment by manipulation, by galvano-puncture, and by coagulating injections. Traumatic aneurism falls to Mr. Holmes' pen and arterio-venous aneurism, and cirsoid aneurism, and aneurism by anastomosis to that of Mr. Hart. And the editor concludes the essay with a notice of dissecting aneurism, and a concise, well arranged description of the Regional Surgery of aneurism, and operation on the various arteries.

We have not space to enter upon anything like a critical examination of this essay. Mr. Holmes amply proves his capacity of not only editing but also largely contributing to a scientific surgical work. He is convinced, as every one must be, of the inappropriateness of the term "false aneurism" to that form of the disease in which only one of the coats of the vessel form the sac; but his anxiety not to complicate the matter by the introduction of new terms, causes him to adhere to the old nomenclature. Nevertheless he sees that there is an absolute necessity for a change of designation of some forms of the disease, and he gives a table in which the terms he uses are contrasted with those hitherto common in England and France,—the chapter *Aneurism* in Erichsen's *Science and Art of Surgery* being used as a sample of the former, and M. Broca's treatise for the latter.

There is an open-handed honesty about this treatise which cannot fail to be admired. We make no apology for introducing the following extract here:—

"The methods of spontaneous cure have been dwelt upon at this length with the view of impressing upon the mind of the reader that all successful plans of treatment are successful from being imitations (whether designed or fortuitous) of these natural processes, in the hope that this fact may lead practitioners to a more careful study of the workings of nature in this particular, and the conditions under which she works. Such a study, carried on by various observers, could hardly fail to be fruitful in results which would lead to the preservation of numerous lives that would be sacrificed to the idea that internal aneurism is a disease almost necessarily fatal. What else is it than the careful study of the natural process of cure that led Hunter to his brilliant and daring proposal of tying the artery away from the seat of the disease? What else led the Irish Surgeons to see that compression, in order to imitate nature, need not suspend the circulation entirely, need not even act continuously; and thus to substitute for the intolerable torture inflicted

by the old plan of compression a treatment which in ordinary cases is harmless, and in a few absolutely painless? Let us remember how comparatively short a time it is since one of the most celebrated Surgeons of his time* announced his preference for amputation over all other methods of treating popliteal aneurism. Let us not forget that one of our most justly valued living authors on this subject† was so satisfied with the advance which had been made at the time he was then writing, as to express his opinion that 'the improvements that have been effected in the mode of applying the ligature to arteries have brought the surgical treatment of aneurism to a degree of perfection which leaves but little room for advancement.' Nor was such an appreciation of modern Surgery at all exaggerated or unreasonable to those who looked at it, as Mr. Hodgson did, by comparison with the mortality after the old operation. In our time surgery has made such rapid advances, that the mortality, which under the system praised by Mr. Hodgson must have amounted to a large percentage of those operated on,‡ is now very much reduced by the invention of instrumental compression, and even this will no doubt soon be further reduced by the more frequent use of flexion and digital pressure. So it may be in medical practice. At the present day, it is hardly too much to say that a patient with internal aneurism is condemned to death as certainly as one with external aneurism used to be to amputation. A century hence, we may hope, our descendants will have as solid reason to boast of their improvement upon the science of Watson and Latham as we have to congratulate ourselves on our advance upon the doctrines of Pott."

It will be at once seen that Mr. Holmes does not intend to throw any discredit upon "the science of Watson and Latham," but that he rather boasts that the surgical treatment of aneurism has advanced with more rapid strides than the medical treatment of the same disease. This is not to be wondered at, for the effects of remedial measures upon external affections are, from the very nature of things, more apparent than their effects upon internal diseases. We can cordially enter, with Mr. Holmes, upon this hope that our

* Pott, *Chirurg. Works*, Vol. III, p. 220.

† Hodgson on *Diseases of the Arteries and Veins.*—ED. 1815.

‡ "I am aware that in Dr. Crisp's tables the mortality of 110 cases of popliteal aneurism operated on by Hunter's method is given at 12 only, and in 7 of the others amputation was necessary, and succeeded. But there is much danger in drawing conclusions from lists formed of published cases, which usually (perhaps it may be said always) include far too large a proportion of successful operations. From the comparatively few cases I have myself witnessed, I should suppose that the mortality is nearly double that which Dr. Crisp's table gives. But such questions can never be settled till our large hospitals can be persuaded to make efficient arrangements for the preservation of complete and unbiassed statistics. A very different computation of the mortality will be found further on."

descendants may have reason to boast of the improvement of Medical Science; and with him also we trust that complete and unbiassed statistics may not only be preserved but, what is more to the purpose, published by the authorities of our large hospitals. Victory is more glorious than defeat, success is more flattering than failure; but we trust the time is not far off when our defeats and our failures will be as openly acknowledged as our victories and successes, for as the latter may be the land-marks by which the true path may be known, so the former will prove the beacons to point out the rocks and shoals to be avoided.

We earnestly recommend our readers to peruse this essay and especially the chapter on Spontaneous Cure of Aneurism. We feel confident that it will not only afford them gratification by the admirable manner in which facts are placed before them, but will also furnish food for much thought.

Under the head *Affections of the Muscular System* Mr. T. Tatum writes an interesting and practical article, marked by reference to numerous published cases. This paper embraces the following subjects:—Sprains and contusions, rupture, inflammation, syphilitic tumour, simple contraction from syphilis, atrophy and fatty degeneration, ossification, tumours, cysts, and cancer of muscles. Affections of Tendons, viz., rupture, section, inflammation, whitlow, syphilitic affections, tumours. Affections of bursæ mucosæ; enlarged bursæ, housemaid's knee, bursal abscess, bunion, enlargement of bursal sheaths of tendons, palmar bursal tumour, and ganglion.

The subject of *Orthopædic Surgery* has been consigned to Dr. Little, who in the space of 58 pages has contributed a good practical essay upon a department of Surgery which we should much like to see rendered less of a speciality than it has become. We know that there is a very general impression that Orthopædic Surgery cannot be successfully practised without the command of elaborate and costly apparatus. Dr. Little is himself the inventor of a very efficient modification of Scarpa's shoe, drawings and descriptions of which he supplies in his essay; but he takes opportunity to remark:—

"It cannot be too strongly insisted upon, that in a large number of deformities, whether treated with or without operation, expensive instruments are unnecessary. More depends upon the tact, patience and perseverance of the practitioner than upon the apparatus employed. Common roller bandages, tin, wood, or gutta-percha splints

aided by manipulations, may, in ingenious hands, supply the place of the most elaborate contrivances."

We have often been struck with the great ingenuity and tact displayed in the practice of the late Mr. Lonsdale and of Mr. W. Adams at the Bloomsbury Orthopædic Hospital. We have seen the most satisfactory results happen from the skillful use of the most simple appliances in the hands of these gentlemen. And we have admired the patience with which they have persevered in the application of these simple contrivances, even when the more expensive and complicated but, as the results showed, not more efficient apparatus were at hand.

The Editor again puts in a favorable appearance as the author of the essay on *Diseases of the Bones.* We have marked several passages for extract, but our space will not permit of our entering upon a critical examination of this very well written treatise. However, there are some points raised which are not to be met with in every Surgical work, and we therefore feel constrained to notice one or two of these. Mr. Holmes says :—

"Inflammation of the bone is almost always known, in common parlance (when it is recognised at all) as *periostitis;* but in truth, periostitis seldom occurs uncomplicated, unless in the course of secondary syphilis, and almost all the cases which pass under that name are really inflammations, more or less extensive, of the bone. That this is so, will hardly be doubted by any one who considers how few preparations of pure periostitis can be found in our museums, and how seldom, during our post-mortem examinations, we meet with periostitis unattended by inflammatory deposit in the deeper parts of the bone. The symptoms, as well as the morbid anatomy, of both are identical, only that in periostitis the thickening and vascularity involves no other part of the nutrient membrane of the bone except the periosteum, and that the inflammatory deposit is confined to the surface of the bone, between it and the periosteum. Periostitis is a quicker process and one more under the influence of remedies than the other forms of inflammation of bone; but in all the same general course of treatment is indicated. * * When there is much tension over the bone, sometimes accompanied (especially in the cranium) with intolerable pain, nothing gives such immediate and decided relief as a free and bold incision down to the bone. The distended periosteum is thus relaxed; and in cases of pure periostitis such a measure may of itself almost suffice for the cure of the disease; but its beneficial effects will be decided though less striking, in cases of deeper-seated inflammation. In cases of chronic inflammation of bone, accompanied by deep-seated

and wearing pain, an opening made with a trephine, for the evacuation of pus, has proved beneficial, even though no pus was found."

We do not assert that there is anything particularly new in the above extract either as regards pathology or treatment, but we feel convinced that the author is correct in saying that the word periostitis is in common use as a substitute for ostitis ; and probably it is so more from habit than from a want of recognition of the actual nature of the disease.

But in what follows there is something new, and that upon a subject of such importance that we make no apology for a long extract.

"*Diffuse periostitis.*—Inflammation of the bony tissue itself is rarely acute, and when it does occur in the acute form passes rapidly into necrosis, under which head it will be presently spoken of ; but acute inflammation between the bone and periosteum, *diffuse periostitis*, is a disease of rather frequent occurrence, and is less noticed in surgical works than its importance would seem to require. It is seen commonly enough in persons about the age of puberty ; more frequently in boys than in girls ; usually as the result of some injury and almost always in one of the long bones. It is so destructive in its effects, so rapid in it course, and is so little recognised, that we have unfortunately numerous opportunities of verifying its existence after the time for treatment has passed away; yet to early and vigorous treatment it is tolerably amenable, at least as amenable as so acute a disease can be expected to be.

"The pathology of the disease appears to consist in the partial separation of the periosteum from the bone, by effusion on the surface of the latter of lymph, or other products,* soon giving place to a copious formation of pus, which spreads along the whole bone, and dissects away the periosteum from it, often from one end of the bone to the other. If examined at an early

* "The disease does not commence by the formation of abscess; often when the swelling and inflammation are considerable, no pus will be found. Of this fact the following is an instance. A lad was suffering from what was supposed to be diffuse cellular inflammation around the ankle after a slight injury. As it was suspected that the inflammation was really subperiosteal, an incision was made down to the tibia. No pus followed. Two days afterwards the boy presented obvious symptoms of confined matter, and now by breaking up the adhesions of the wound a copious evacuation of pus was obtained, and the surface of the bone was felt exposed. A few days later, swelling and tenderness were found over a higher part of the tibia. The Surgeon, thinking that on the former occasion he might not have divided the periosteum freely enough, now took care to press the edge of the knife firmly against the bone for some distance. Matters went on exactly as in the former wound. No pus was found at the time, but on breaking down adhesions, two days later, with a probe, the pus was discharged, and bone felt exposed."

period of the disease, the periosteum does not (at least it very often does not) display any distinct signs of inflammation, either in change of colour or of thickness; nor is the surface of the bone visibly inflamed. On the contrary, it usually looks white, and inclined to gangrene, a consummation which rapidly impends over such cases. Sometimes, however, the surface of the bone may be found slightly worm-eaten, and on squeezing it, its superficial layers are found more readily separable from the deeper tissue than in health; large drops of blood can in such instances be pressed out of the vessels which pass into the bone from the periosteum. A little later and necrosis is unmistakeably declared and the whole diaphysis usually perishes, leaving the articular ends unaffected, and therefore not involving the neighbouring joint. The joint, however, does not always escape. A boy was admitted into hospital, several days after an injury, with great swelling of the fore-arm, evidently depending on the formation of matter. A grating sensation, perceived on rotating the hand, together with the history of the accident, led to the belief that fracture had occurred. He died of pyæmia; and then it was discovered that a periosteal abscess, extending from the shaft of the radius into the wrist joint, had so eroded the articular cartilages as to occasion the sensation of crepitus.

"The course of the disease is usually as follows: it commences in the great majority of cases, with an injury of more or less severity, occurring to a person generally of the strumous constitution, at any rate a weakly person; the symptoms which immediately follow the injury are usually slight, so that even the occurrence of the accident is perhaps nearly forgotten; then, after a varying lapse of time, probably four or five days, symptoms occur which are almost invariably attributed at first to diffuse cellular inflammation, or to acute rheumatism, viz., rigors, pain in the part, and an œdematous angry swelling. At the outset the diagnosis is not easy; indeed before suppuration has occurred, perhaps no certain diagnosis can be made. However, as respects diffuse cellular inflammation, the age of the patient, the comparative remoteness of the cause, and the previous immunity of the superficial parts, will lead to a suspicion of the nature of the case, which will be strengthened when the inflammation is seen to be limited to the section of the member first affected, instead of passing the joint, and spreading up the limb, as an erysipelatous affection would in all likelihood do, and will be converted into certainty by the discovery of deep seated matter, either by fluctuation or on puncture. Fluctuation cannot always be detected, since the tension of the membranes which bind down the pus, and the tenderness of the superficial parts, combine to oppose its discovery. Exploratory punctures, however, should never be neglected. If the disease be merely superficial, they can do no harm; and it is of vital importance to discover early, and give instant exit to, the pus before it has dissected off large portions of the periosteum,

and involved the death of a great part of the bone. The diagnosis between a case of this sort and one of acute rheumatism will depend upon the nature and history of the disease, and on the presence or absence of constitutional symptoms of rheumatism, or rheumatic affections of remote parts. At the outset of the case the diagnosis may not be very confident, but the main point to recollect is, that any periosteal affection, if acute, is liable to run early into suppuration, and that in such cases, whatever view may be taken of the origin of the disease, whether it is to be considered rheumatic or otherwise, the local treatment is far more important than the constitutional. What Sir P. Crampton says of the acute periosteal whitlow applies with much greater force to acute periosteal affections of the larger bones; 'there are few diseases where art can do so much and nature so little.'

"If the disease be allowed to go on unchecked, the whole circumference of the limb will become greatly swollen and œdematous, usually with that tense glistening aspect which tells of subjacent suppuration. The patient mostly complains of great pain, especially acute at night; he loses appetite and flesh rapidly. Pyæmia is very liable to occur, and many of these patients die of it. A few die exhausted by the violence of the action, and by the profuse suppuration. If the patient survive, and the abscess do not obtain a free and depending opening by timely incisions, it will burrow among the muscles, and ultimately numerous openings will form, exposing necrosed bone. The dead bone appears to separate much sooner than in other forms of necrosis, and the repair to be proportionally active. Thus, in an adult, almost the entire length of the shaft of the ulna was thrown off and removed three months after the injury which led to the complaint; and, even at that date, the repair appeared to be far advanced. In less acute cases, where only a portion of the surface of a bone is involved, the disease pursues the ordinary course of necrosis.

"The subjects of this affection are almost always young persons in whom the strumous diathesis is well pronounced; but it occurs more rarely in healthy subjects about the age of puberty, or even earlier; and some cases are observed (as the one to which allusion has just been made) in adults of impaired constitution and dissipated habits.

"The bone affected is, in the great majority of cases, the femur; and it is no doubt in consequence of the great size of this bone, and the severe effects which always attend upon a large abscess situated at so great a depth, that the disease is so fatal. But reference has already been made to two cases in which the bones of the fore-arm were attacked; and any of the long bones may be, and is not unfrequently the seat of the disease. The flat and irregular bones are more rarely affected; but Sir P. Crampton's case is well known, in which an acute abscess formed beneath the periosteum of the bones of the nose and cranium on both sides.

"The treatment of acute periosteal abscess is a matter of the greatest importance, as it is only by vigorous measures that so rapid and dangerous an affection can be relieved. Among these measures, the first and most important is to make timely and sufficient incisions into the swelling. If doubt exist as to the nature of the swelling, or as to the situation of the pus, they will be settled by the grooved needle; but even if no pus be found, it is better in any case of periosteal inflammation, where the pain is great, to make an incision down to the bone in the part to which such pain is referred. In children, it will be advisable to administer chloroform before commencing the examination, when the affection is deep-seated.

"During the acute stage of a periosteal abscess, free exit having been obtained for the matter, the patient must be treated on general principles; no special internal treatment is necessary for the affection of the bone. The indications are, to allay pain, to support the strength, and to avoid, if possible, the constitutional affection which leads to pyæmia. The last is the most important of all; patients seldom die of the 'Surgical fever,' so called, which is usually present; they seldom die of the exhaustion of the discharge; but they die by pyæmia in a large per centage of the cases. How great the mortality is, it would be difficult to say, since the disease is not generally recognised in our nomenclature; but out of a comparatively small number of cases which have occurred during the last few years in the Surgical Wards of St. George's Hospital, a very large proportion have died of pyæmia. Free and early incisions give the patient the best change of escaping this fatal complication. No fear need be entertained of decomposition of the pus from the admission of air. In fact, pus which is confined over a bone, in an acute inflammatory disease, will probably be already sufficiently putrid. The openings should at first be made in as depending a position as possible, and they should be so free as to preclude all risk of their closing again. After the opening of the abscess, free stimulation is generally, if not always, necessary. The patient will, perhaps, be unable at first to take solid nourishment, since these affections are generally attended with severe fever; but as soon as the evacuation of the matter has removed some part of the irritation, his appetite will probably return.

"In abscesses which are at once deeply seated and small, it may sometime be advisable to use a drainage tube; but in most cases the collection of matter is too extensive to allow of this treatment being beneficially adopted, at any rate till a later period of the case when the abscess is contracting and the incisions show a tendency to close. In the memoir of M. Chassaignac, already referred to, the author speaks highly of the advantage of injections of very dilute hydrochloric acid, which have the effect, according to him, not only of cleansing the suppurating cavity, but also of hastening the removal of superficial exfoliation by dissolving the dead bone.

"If the patient has survived the acute stage of the disease, the abscess may long remain in a chronic condition, exposing the bone. In the more favourable cases, the outer shell only of the latter has perished ; while in the most severe, the entire shaft, separated from the epiphyses may come away in a mass ; or even the epiphyses themselves may share in the destruction, though that is very rare."

The above extract, comprising an entire section of Mr. Holmes' essay, will answer more than one purpose. It will serve to show how far Mr. Holmes has the literary capacity of so clearly expressing his views as to give an individuality to his description of disease ; how far such description is faithful ; and what claim the author has to be placed in the ranks of Scientific Surgeons. For ourselves we thank Mr. Holmes for thus prominently noticing a disease which, we agree with him, it is of the greatest importance to recognise early. We would draw particular attention to the instructions given as to treatment. Notice the stress that is laid upon making free and timely incisions. *To support the strength* should ever be the object of the Surgeon, and we are convinced that almost every case of the kind will not only *bear*, but absolutely *require* free stimulation. In the outset of our career we witnessed a fatal case of diffuse periostitis in which incisions were freely made, but, as we think, the presence of pus was not sufficiently early recognised, and the youth was treated antiphlogistically, and put under the influence of mercury, in consequence of the evidently very acute nature of the inflammation. With reference to Mr. Holmes' remark that the use of the grooved needle will settle the existence and situation of pus, we would observe that a fine trocar and canula will be found a better instrument ; for when the pus is deeply seated, the soft parts fill up the groove of the needle or, on withdrawal, wipe out the pus, whilst in the case of the canula, if pus be reached, a gentle pressure on the surrounding parts will soon demonstrate the fact, or on withdrawal a drop or two will be found within the tube.

Mr. Athol Johnson contributes a treatise on *Diseases of the Joints*, which occupies 90 pages. He divides his treatise into two parts ; I. Diseases common to all the joints ; II. Diseases of Individual joints.

This is followed by an article on *Excision of Bones and Joints* by the editor.

We have already occupied so much space that we must refrain from any further remarks upon these treatises, than to say that they appear to be written in the spirit of the

rest of the work, viz., to furnish the most reliable information and the most modern views as to diagnosis, pathology and treatment. Mr. Holmes speaks very cautiously regarding Excision of the Knee. He mentions many reasons why excision of this joint should be less successful than that of the elbow, and adds—

"Still, though it has been vehemently decried, and though its general adoption has possibly been equally retarded by its having been vehemently overpraised, it seems likely to hold a permanent place among the resources of operative Surgery for the treatment of appropriate cases."

Mr. Alexander Shaw supplies the essay on *Diseases of the Spine.* It is equal in excellence to any thing in the book, and is an admirable sequel to the treatise on injuries of the spine in the second volume.

Diseases of the Nerves and *Neuroma* are treated of by Dr. Brown-Séquard. We are struck with the following passage:—

"The cases showing that tetanus may be cured either by an amputation of a limb or by section of a nerve, clearly prove the dependence of this affection on an irritation starting from some peripherical part of a nerve. Those who maintain that tetanus, when it has fairly begun, and attacked not only the head, but the trunk and limbs, cannot be cured by these operations, have not read the details of the cases of cure which have been published. No doubt, that in many cases in which the spinal cord is either inflamed or rendered extremely excitable, the section of a nerve or an amputation will be of no avail; no doubt, also, that if an inflammation has been propagated high up in the trunk of a nerve, towards its roots, these operations will be useless; but it is, nevertheless, most important to give the chance to the patient. I need not say that the simple division of a nerve will always be preferred to an amputation, unless there are some special reasons for this last operation."

This may be the teaching of Dr. Brown-Séquard, but we venture to state that it is not the teaching of nineteen-twentieths of modern Scientific Surgeons. And further we can assure Dr. Brown-Séquard, that his *ipse dixit* will not lead to the practice he recommends in tetanus becoming generally adopted. We feel some surprise that Mr. Holmes did not call for a revision of this paragraph before he gave it a place in his book, notwithstanding the announcement in his preface that "the opinions expressed in each separate essay rest upon the authority of the writer, whose name is signed to it."

Surely Dr. Brown-Séquard should have been asked to indicate where "the details of the cases of cure which have been published" are to be found; and he should then have been requested to contrast these with the cases of failure which have (how many have not?) been published. We cannot help calling particular attention to the sentence in the above extract, commencing with "No doubt" and ending with "patient." We have a desire not to misrepresent Dr. Brown-Séquard. Does he really mean that in so large a proportion of cases of traumatic tetanus the spinal cord is neither inflamed, *nor rendered extremely excitable*, nor is there any inflammation extending high up the trunk of the nerve, that amputation or neurotomy gives the patient a fair chance of a cure? We do not see what other meaning is to be put upon it, and we question the soundness of the author's views. We are inclined to accept his notion as to the reflex character of the affection, and as to the nutrition of the medulla oblongata and spinal cord being affected, but we are satisfied that in this case *prima causa sublata tollitur effectus* does not hold. We should be as disinclined to universally adopt the practice here recommended, as we should to trephine the spine to raise depressed vertebral arches, and for much the same reason. (Vide notice of Mr. Shaw's article on Injuries of the Spine in our last number.)

Dr. Brown-Séquard quotes from "a table given by Mr. Poland (in this work, vol. I. page 607) that out of 1342 cases of major and minor operations at Guy's Hospital, there was but one case of tetanus; while out of 398 cases of compound fractures and 594 cases of wounds of all varieties, there were 18 cases of tetanus; giving a proportion, when the nerves were simply divided by a sharp knife, of one case of tetanus out of 1,364 patients; and of one case out of 55 patients, after wounds and fractures, when the nerves were bruised or irritated by pressure."

There are two typographical errors in the above quotation; page 607, should be 307, and 1,342 cases should be 1,364.

We must protest against the use of figures in this way. The number of cases collated are too small to enable correct deductions to be drawn; and in determining a question of such importance as that in the text, it is highly objectionable to confine oneself to statistics gathered from one institution only. We acknowledge the correctness of the conclusion that tetanus infinitely more frequently follows

irritation of nerves from punctured wounds, fractures, burns, &c., than it does a clean section of a nerve, but we are convinced that had Indian experience been drawn upon by Mr. Poland and Dr. Brown-Séquard, the proportions above given would have been materially altered. The subject of tetanus and its treatment has been frequently illustrated in the pages of this Journal, and the present number contains a paper in which analyses of published cases are given, and in which attention is prominently, and as we think properly, drawn to the question of local treatment of the excited medulla oblongata and to the benefit to be derived from free purgation. But with reference to the Statistical part of the subject we should much like to see a carefully constructed table of the same character as that given in Mr. Poland's essay, specially showing the number of cases following Surgical operations in Indian Practice.

This third volume of the System of Surgery concludes with a short notice of *Diseases of the Tongue,* by Mr. Holmes Coote.

It could not be expected that unqualified praise could be given of the manner in which every section of a work of this character has been executed; it surprises us to find that there is in it so very little to which exception can be taken. So well satisfied are we with the manner in which both Editor and Contributors have performed their several tasks, that we are anxiously looking for the fourth and concluding volume, upon the arrival of which, should it at all equal its predecessors, we shall consider ourselves the fortunate possessors of one of the very best complete Surgical works which has ever been produced in our language.

Description and Strength of some of the Indian and Burman Timbers. By Conductor T. W. SKINNER, Gun Carriage Manufactory. Madras: Government Press, 8vo. pp. 168.

ON opening this book we find the first part of the preface running thus:—

"Since the great Exhibition of London in 1851, and that of Madras in 1857, there have been several reports published on the Timbers of India and Burmah, which have afforded much valuable information on many points; but they are still wanting in respect to the nature and strength of the different woods—a subject, which is of much importance to the Engineer and practical

man, and which has engaged the attention of some of the most eminent Mathematicians and Engineers of Europe for the last two centuries."

After a statement of the abbreviations employed in the work, we have a copious Index of Synonyms, of the various Timber-yielding trees, not only in scientific language, but in Tamil, Teloogo, Malayalum and Burmese.

Then follow certain chapters, the heads of which we give in order :

1. Introduction.
2. Seasoning of Timber.
3. Preservation of Timber.
4. Strength of Timber.
5. Transverse Strength.
6. Stiffness of Timber.
7. Dimensions of Pillars and Columns pressed in the direction of their axes.
8. Measurement of Timber.
9. Superficial contents.
10. Cubic contents.

The above subjects occupy upwards of twenty pages.

In the *Introduction*, the author makes some very good practical remarks on stems, chiefly exogenous; in addition to which, he speaks in general terms of the color, odor, hardness, strength, &c., of various kinds of timber.

The chapters on the *Seasoning* and *Preservation of Timber* are not merely an epitome of what is already known on the subject, and which could be drawn up easily from elementary works on Botany and Vegetable Physiology: they are really the results of many years' observation, both in and out of the Manufactory.

The remainder of the subjects appear to us to be chiefly the results of careful experiment, conducted either by the writer himself or under his immediate superintendence.

Many of the subjects treated are rendered still more valuable by their being copiously illustrated, by calculations, as well as by tabular statements; in addition to which, we find two large, neatly executed, lithographic plates at the end of the book, exhibiting sketches of the apparatus employed in the experiments.

The remainder of the book is found to contain a series of Tables, 146 in number, devoted to the consideration of as many kinds of Timber-trees; and each table occupying a page. We here subjoin one of the tables without any alteration, as a specimen.

Experiments on the Elasticity, direct Cohesion, and comparative Strength of some of the Indian and Burman Timbers.

Number.	Genera.	Authority.	Order.	Synonyms.	Specific Gravity.	Weight in lbs. of a cubic foot of seasoned Wood.	The measure of elasticity. $E = \frac{L^3 P}{b d^3 \delta}$	The value of C or direct cohesion in lbs.	Co-efficient for comparative strength. $P = \frac{L W}{b d^2}$	Co-efficient for comparative stiffness. $S = \frac{40 b d^3 \delta}{L^3 P}$
117	Soymida febrifuga.....	Juss.		Red Wood, *Eng.* Shem murrum, *Tam.* Soimida, *Tel.* Rohana, *Hind.* Rohun, *Beng.*	1,056	66	3·986	15,070	1,024	·0100
	Swietenia febrifuga.....	Rox.								

117.—*Characteristics and Uses.*—This is the common Indian red wood, the tree grows from 50 to 60 feet in height, and from 3 to 4 feet in girt; the leaves are abruptly pinnate; leaflets opposite, oval, oblong obtuse; flowers small, greenish white, in March and April; capsules five-celled with winged seeds. The wood is much valued for its strength and durability, it is of a bright red color when fresh sawn, turns darker after exposure, the grain is tolerably close, but not even, and does not work smooth. A cubic foot of unseasoned wood weighs from 80 to 85 lbs. *Uses.*—The Hindoos prefer this wood above others for the wood work of their houses, and it is the best wood for clamps in masonry walls; its durability is such, that when some of the posts of this wood, in the palisades of Fort Saint George, were taken up in 1859, the wood was fresh, and in no way deteriorated; it is not known when the palisades were erected, but supposed to be in the seventeenth century. Another piece was taken out of a wall in the workshop of the manufactory, during the recent alterations, and tested; a piece 3 feet in length 1½ inch square stood 1,232 lbs. before it broke down. The workshop was erected in 1803; it also makes excellent piles, and used for Railway sleepers.

The value of such tables as these will be seen at once by the practical man, and therefore needs no comment from us. But we cannot pass it by without remarking that it must have cost the author no small labour to arrive at the conclusions in figures on the right of the table; and again, from our experience in such matters, we are certain that he must have waded, with considerable patience, through a great many ponderous tomes of figures and descriptions of plants, in order to have identified such a number of them.

We do not pretend that the work is without faults;—without minor errors, for instance, in the orthography of Botanical terms, &c., &c. These and similar matters, despite all the care bestowed on the correction of proof-sheets, are, as a rule, pretty well mismanaged, particularly in this country.

We have no doubt but that the work will be adopted as one of the manuals for the pupils at the Manufactory; and we are pretty certain that it will form no mean addition to the libraries of many in the public service. We can confidently recommend it as a valuable work of reference upon points of great importance in a branch of scientific research, which form one of the most practically useful department of Economic Botany.

Spinal Debility: its Prevention, Pathology, and Cure, in relation to Curvatures, Paralysis, Epilepsy, and various Deformities. By E. W. Tuson, F.R.C.S. Formerly Surgeon to the Middlesex Hospital. London: John W. Davies, 54, Princes Street, Leicester Square—1861, 8vo. pp. 155.

Mr. Tuson is known as the author of a folio work on the Anatomy and Surgery of Inguinal and Femoral Hernia; and of a System of Myology, illustrated by coloured plates, ingeniously exhibiting the muscles in layers, as they appear on dissection, together with a supplementary volume in which the arteries, veins, nerves, and lymphatics are shewn in a similar manner. He has also written treatises on the Cause and Treatment of Curvature of the Spine, and on the Structure, Functions and Diseases of the Female Breast. He is also the author of a duodecimo Dissector's Guide, and a Pocket Compendium of Anatomy.

Mr. Tuson states the objects of his present work in a short preface, which concludes with a paragraph, the opening sentence of which must be beyond dispute.

"The utility of such a work can only be appreciated by its perusal, and the consideration of those cases brought forward to illustrate the mode of treatment. The impossibility of performing a cure by alone treating the deformity, or prevailing symptoms, has been clearly demonstrated. Many persons have found the greatest benefit, some almost immediately, others at a remoter period, from the methods recommended in the present work. The relief of pain, the comfort of the patients, and their restoration to health, are the primary objects of the author."

This last sentence will assuredly find an echo in the heart of every truly benevolent member of our profession.

Mr. Tuson commences with some general observations upon the great mortality among infants, and the manner in which "the absurd directions of prejudice, fashion, and folly" have led the human race to presume "to use means more calculated to obstruct than improve the healthy growth and organization of its offspring." He then mentions the difference between deformities and malformations, and proceeds to treat of the spine. He gives an anatomical description of the spinal column, to which we take no exception beyond the statement that "each rib articulates with two vertebræ at their heads, except the first and last," which is not only ungrammatical but incorrect. The great importance of the intervertebral substance is dwelt on, and Mr. Tuson is of opinion that many cases of spinal debility arise from this substance losing its elasticity, becoming compressed and atrophied, and then the spinal nerves are pressed upon as they pass through the intervertebral notches. He accounts for the complaints of weakness which convalescents make, after any exertion, in the same manner, and controverts Dr. Inman's theory that such weakness and its accompanying pain is due to stretching of the muscles. The author further states that:—

"After mature consideration, much experience, and numerous opportunities of making examination of facts, I have come to the full conviction that, in almost all cases of curvature of the spine, either laterally or anteriorly, and in some of the cases posteriorly the condition of the vertebræ is in a softened state somewhat like sponge, and that the bony ring which surrounds the body of these bones, is not sufficiently strong to support the weight placed upon them."

Mr. Tuson proceeds to describe the general treatment of deformity, and we cannot but approve of his statement that too much care cannot be given to the proper clothing and nourishment, both as regards food and air, of young children so as to prevent the occurrences which lead to deformity. And he then enters upon the consideration of particular deformities.

The several forms of curvature of the spine are described, and the appropriate treatment laid down. The chief principles he keeps in view, are rest, support, and gradual pressure upon the displaced vertebræ. Wood cuts are given illustrative both of the anatomical condition of the affected parts and

of the apparatus necessary to the correction of the deformity. And the details of numerous cases are interspersed throughout the work.

Deformity of the Chest, uncomplicated with spinal curvature, receives a short notice, as does also Wry-neck. And the various deformities of the extremities are shortly reviewed. Mr. Tuson does not appear to be an advocate for division of the tendons of the contracted muscles in all instances of club-foot, but lays great stress upon the prolonged use of mechanical means, aided by strict attention to general health.

The work concludes with a notice of Tumours which are admitted under the head of Deformities, because they "generally cause the external parts to become deranged in their shape or natural appearance."

The tumours mentioned are encysted tumours of the scalp, face, foot, &c. Those of the scalp are to be dissected out, but upon other parts of the body Mr. Tuson thinks it far better to avoid an operation. He owns that—

"On this point I have had to contend with the opinions of several of my professional brethren, who have entertained different views, and who, even after the tumours have been cured by local applications, have not been convinced of the justice of my remarks."

We fear we should enlist under the banner of the "professional brethren" upon this matter rather than under that of our author. Mr. Tuson speaks highly of the application of equal parts of Sulphate of Zinc and flour, made into a paste with water, to cancerous growths. The application may be repeated if the whole of the deceased structure is not destroyed, and the ulcer dressed with Stramonium ointment, which "gives ease, and tends to heal all ulcerated surfaces quicker than any other ointment, and is a most valuable preparation."

We have not space to enter upon a more critical examination of the contents of this work than we have above given. It is very beautifully printed, and does credit to the publisher; and those of our readers who desire to possess the entire literature of Spinal Curvature should give this little work a place in their libraries.

But we must, in fairness to all parties, add that we are unable to claim for the work any very remarkable originality—and that, were we disposed to be critical, there are some points of Pathology in which we cannot entirely agree with our author.

Deaths in Madras during 1855, *with a Mortuary Report.* By A. LORIMER, M.D. Quarto, pp. 73.

Do. do. 1856, *with do. do.* By *do.* Quarto, pp. 85.

Do. do. 1857, *with do. do.* By W. R. CORNISH, Quarto, pp. 75.

Do. do. 1858, *with do. do.* By *do.* pp. 75.

Do. do. 1859, *with do. do.* By *do.* Large 8vo., pp. 83.

Do. do. 1860, *with do. do.* By *do.* do. 8vo., pp. 95.

IN no department of public records in the Medical Department has there been a more marked improvement visible, than in the series of reports named above—and we purpose briefly to notice them with a view to directing attention to the desirability of similar reports being prepared for other chief stations in our presidency, those more especially which are inhabited by a large population, the Death-rates in which are at present merely matters of surmise.

The earlier Reports of Dr. Lorimer, for many years Secretary to the late Medical Board, were of the briefest description (extending over only a few paras.), but were carefully compiled; and deserved some commendation as the first attempt to institute in this Presidency a branch of research that had been carried on with marked ability for some years in the sister Presidency of Bombay. They were, however, liable to one serious objection, viz., that the forms of "Returns" therein set forth did not correspond with those adopted by the Registrar General in England in his Annual Reports.

In the 5th Volume, however, of these now under notice, Mr. Cornish introduced the desired assimilation, and in doing so explained the difficulty with which it was attended—and which had perhaps deterred his predecessor from effecting the requisite alterations in the forms of his tabulated Returns.

Mr. Cornish says,

"The Registrar General has only one set of tables for natives of Britain, and Foreigners. In India it is absolutely necessary that the relative rates of mortality in the various races should be shown separately, if the tables (when the population shall have been more accurately determined) are to be of any value. It has therefore been deemed expedient to submit separate returns for the four great classes* of inhabitants, showing the diseases from which

* Europeans, East Indians, Hindoos, Mahomedans.

deaths occurred at various ages, and the districts in which the various classes of disease prevailed. The general tables at the end, include the deaths in the whole population without distinguishing caste or race. There are but few persons living in Madras who do not come under one of the classes specified. No attempt has been made at minute division of the various Hindoo castes, it being impracticable, at present, to separate them with accuracy.

Adopting this system in the report of which the foregoing is one of the early paragraphs, (that for 1859), Mr. Cornish proceeds carefully to investigate the different causes likely to influence public health and furnishes a most valuable digest of the experience of that year as to the causes of mortality most potent in Madras.

From a careful perusal of it much of interest can be gleaned, and the accompanying tables are calculated to afford means of contrasting the ages at time of death, causes of death, prevalent diseases affecting certain classes and the population at large, &c., with similar points as recorded in the Registrar General's Returns.

Our more particular notice must, however, be now directed to the able Report of Mr. Cornish for the year 1860—one likely to be long remembered in this Presidency in consequence of the prevalence of a severe epidemic of cholera, near the close of which Sir Henry Ward died to the deep regret of all who knew him. We elsewhere record (pp. 253 *et seq.*) certain proceedings of Government regarding this Report—and we wish we could congratulate Mr. Cornish that his valuable work had received that praise to which it is so eminently entitled. But we are glad to observe the high encomium passed upon it by the head of the Medical Department, and the valuable remarks with which he has urged upon the consideration of Government the importance of due attention to many of Mr. Cornish's conclusions and suggestions.

Among the preliminary considerations entered upon by the Author is that of the actual number of inhabitants in Madras—a point of essential importance to a due appreciation of the rate of mortality as compared to population. On this point, and as a fair sample of the clear and scientific style of the whole Report, we reproduce the argument of Mr. Cornish, who says (pp. ii to vi.)

"4. One of the great difficulties in comparing the death-rate of the Presidency town, with that of any place the statistics of which

are accurately known, is the impossibility of fixing the probable number of inhabitants occupying the wide-spread and straggling Districts coming "within the limits of the Supreme Court" of Madras. The population has been variously estimated, and the estimates vary from 720,000 to 450,000. The Municipal Commissioners have lately attempted a rough census of the population through the agency of the Assessment conicopolies, but the results, it is understood, are by no means to be relied on. Captain T. E. Bell, President of the Municipal Commission, informs me that, in his opinion, the population of Madras has been much over-estimated, and that there are good grounds for supposing the total of inhabitants to be not more than 450,000, if indeed there are so many. This view corresponds more with what we know of the ascertained yearly mortality, than the higher estimate of 720,000.

5. The registered deaths in Madras, for instance, in the six years ending 1860, have averaged in round numbers 10,000 a year. Allowing another thousand to represent the unregistered mortality, and supposing the population to be 700,000, this would give a general death-rate of only 15·7 per thousand—a rate lower than the mortality in the whole of England and Wales, which varies from about 36 per thousand in unhealthy towns, to less than 15 per thousand in healthy agricultural districts ; and the general average of which is 22 and a fraction per thousand. But, on the other hand, supposing the population to be four and half lacs instead of seven, the death-rate estimated for the same period would be 24 per thousand, and considering the classes of disease which produce the greatest mortality, there is some reason for concluding that the latter rate is the most to be relied upon.

6. As a standard of comparison we may take the mortality of the Madras Native Army for a long period of years. The statistics of this body are sufficiently accurate to fix a mean death-rate of adult males at what are spoken of as "soldiers' ages." This death-rate is found to be, in round numbers, about 18 in the thousand. But it is enhanced above that of the corresponding portion of the Civil population by the vicissitudes of foreign or field service, and the prevalence of cholera when marching from station to station in the ordinary course of relief. It is affected moreover by the locality in which the soldier resides, some stations being peculiarly adapted for the preservation of health, while others (aided no doubt by other than climatic causes) have a contrary tendency. Thus, at the stations of Quilon, Jaulnah, and Bellary, it has been found that the death-rate of the Native Army does not exceed seven per thousand per annum ; while in Burmah, the Straits or China, the mortality has been so high as twenty-nine.

7. Now if the mortality in a body of picked men, between the ages of 18 and 50, amounts to 18 per thousand, or excluding the

number exposed to the greater wear and tear of life beyond the sea to 12 per thousand, it is a fair inference that the general death-rate of the Presidency, which includes persons of all ages, sex, caste, and occupation, must be more than 15 per thousand, or to express the same idea in other words, that the estimated population of seven lacs and twenty thousand, is much in excess of the actual.

8. We have some data for arriving at rough conclusions as to the general death-rate of the native population of Southern India, although it does not permit of application to any one town or station.

The Registrar General of England shows that the mortality of the Civil population throughout England and Wales is 22·38 per thousand, and that the male population at soldiers' ages, die at the rate of 12 per thousand, or much in proportion to what the Native Army loses by death in times of peace in its own country. If these proportions between the death-rates of the Army and Civil population are applicable to India as well as to Great Britain, and that they are so in a great measure, there can be little question, we have, in the death-rate of the Native Army serving within the Presidency the means of calculating, although imperfectly, what the general mortality of the population must be.

9. The calculation will probably be an under-estimate of the actual mortality, inasmuch as the native soldier in ordinary garrison life (unlike the European) is placed in much more favourable conditions for the preservation of health than the bulk of the population at the same ages. In the first place he is a picked man, free from personal blemish or immediate tendency to disease, and is probably better fed, clothed, and lodged, than nine-tenths of his neighbours in civil life. His military duties (setting aside the occasional exposure and danger of marching or field service) are not ordinarily such as to injure his health, and in respect to his domestic residence within the "regimental lines," general cleanliness and order are enforced to a degree unknown in the ordinary native villages or towns. He is, in addition, protected in some measure by vaccination from the dangers of small-pox, and enjoys the advantage of skilled medical aid whenever he may be incapacitated for duty by sickness. Under these circumstances, there is no reason to suppose that the death-rate of the Army is in excess of that of the male adult population; on the contrary, the small insight which the experience of the best of our Indian Jails gives as to the health of the poorer classes, would seem to show that it is much below the ordinary standard.

10.—Putting all these considerations aside, and supposing the deaths amongst the male adults to bear a similar proportion here in India to what they are known to do in the entire population of England and Wales, we arrive at the conclusion that the annual ratio of 22 or 23 deaths to one thousand of living represents the

general mortality for natives of all classes in this Presidency. Although these figures represent only a very crude approximation to the actual death-rate (which can never be accurately known until a system of registration of births and deaths for the whole Presidency has been brought into operation) it would no doubt be seen that here, as in countries where statistical records of population are kept, the effects of condensation in towns, and the difficulty of providing those congregatated in limited localities, with the means of removing impurities, or supplying them with wholesome water and pure air, tell with marked effect in increasing sickness and mortality above the healthy standard which obtains in more scattered populations.

11. If we take the ratio in the foregoing paragraph as representing roughly the general mortality amongst the native population in Southern India, we have an imperfect method of testing the correctness of the mortuary returns of Madras, that is, supposing the most recent estimate of the population at 450,000 can be in any degree relied on. Thus while the general average of the past six years shows, with imperfect registration, a death-rate of 24 per estimated thousand of the population, the year 1860, which, as before stated, was an unhealthy year, gives on the actual number of deaths registered a rate of 30 per thousand. These are however merely guesses at the truth, and it is not worth while to take up the attention of Government in speculations of this nature, except with the view of showing how much all progress as to the health statistics of the Presidency, must be at a stand still, until the bulk of the people have been enumerated, and the variations of the population by births and deaths are registered.

Our space does not allow us to enter in detail upon the several topics specially investigated, but we may briefly note some of general interest to professional men.

The Medical history of 1860 was peculiar: and rarely have a smaller number of deaths from cholera been recorded than in the earlier months of that year;* but before its close *two thousand five hundred and eighty* deaths had occurred from this disease. The unusual dryness, and the heat of the hot weather of that year are (with the absence of sea breeze,) considered by Mr. Cornish as tending to influence the mortality from zymotic diseases, and he supports his conclusions by references to the Meteorological Returns published weekly in the Fort St. George Gazette.

We are hopeful that we may soon be in a position to institute some further researches with regard to the influence

* We alluded to this subject in our 1st volume, page 498 *et seq.* to which we may refer our readers.

of the seasons upon the mortality from various diseases; and as an aid to such investigation our Author furnishes us with a linear table of mortality for seven years showing the death-rate from all causes from month to month. From this table is made apparent the fact that April, May and June are the healthiest months in Madras: and Mr. Cornish suggests that this is due to the S. and E. winds then prevalent, and which reach Madras without pollution from noxious vapours arising from surface soil. But, he properly adds, that this cannot be satisfactorily discussed until we are acquainted with the exact amount of Ozone in sea and land winds.

The influence of the sea breeze in preventing (or in not causing) disease is also ingeniously shown by comparison with a linear table of mortality at Bombay, taken from Dr. Leith's Report for 1857), and from comparison of the two tables it becomes apparent that the seasons of greatest health —or of the prevalence of disease—are exactly opposed on the Eastern and Western Coasts. The proportion of cholera deaths to all deaths of each of the four great sections of the community were found in Madras to be—Europeans, 16·5—East Indians 21·6—Hindoos 17·6—and Mahomedans 25·9; per cent.

The importance of completely removing all cholera evacuations is dwelt upon at some length, and the experiences of Dr. Mudge and Mr. Blacklock of this city are detailed in corroboration of the theory and practice of Dr. Budd, of Bristol. Dr. Bidie has, in our own pages, recorded similar views.*

The almost complete immunity from this disease, enjoyed by the Regiment of the 4th M. N. I. during 1860 (*and*, we are glad to add, *subsequently*) is alluded to. We believe this to be due to the admirable system of conservancy carried out by the sepoys themselves, who engage sweepers to remove all offensive matter from the lines several times during the day. Our attention was drawn to this fact and to the very unusual healthiness of the corps by its Medical Officer (Dr. Cooke) some months ago: and having ourselves been in charge of the Sapper Militia who preceded the 4th in the occupation of the huts, we can assert positively that it is not to these—or the site they occupy—that this immunity is referable. It is worthy of remark, too, that the immediate neighbourhood of these lines, which are close to Royapooram, has

* Vide Dr. Bidie on the Etiology of Cholera, Medical Quarterly Journal, vol. 1., page 25.

been, during 1861 and 1862, the scene of numerous cases of cholera, more especially among the classes with whom the sepoy is likely to mingle, and yet we believe scarcely a single case has occurred in these lines.

The immunity of certain, alas how few! localities is dwelt upon by Mr. Cornish as possibly affording some indirect means of ascertaining some rational explanation of the conditions which tend to "increase and multiply the germs of the disease." We can only add that no pains should be spared to further this method of investigation; and we consider it a *duty* that every Medical Officer should aid in the admirable scheme of enquiry, projected by Surgeon Major Balfour (now Acting Deputy Inspector General of Hospitals, Pegu), as to the nature and peculiarities of places where cholera has never originated.

Some valuable linear tables are given, embracing the result of seven years' experience as to the "influence of season on the mortality from miasmatic diseases," the first of these relating to Cholera and Diarrhœa; and the second, to Fevers, Dysentry and Small-pox. From a consideration of these tables (taken in connection with that before alluded to as referring to mortality from all causes in Madras) it is apparent "that, it is cholera mortality which gives the shape to the wave-line indicating the general mortality in each month."

"Small-pox" is in its zenith in March, in Madras; and in April, in Bombay.

Our author enters upon a brief examination of the statistics of death from child-birth, but the numbers under review are perhaps too small to found any reliable conclusions upon them: but a comparison of the ages of mothers, who perish under these circumstances, in Madras and in London, proves that the rates of mortality of corresponding ages are almost identical. But the actual percentage of fatal cases is very high in Madras as compared with the supposed numbers of labours—this will, we trust, be less apparent every year—and to this desirable end nothing can contribute more efficiently than the Madras Lying-in-Hospital which is, perhaps, *of all the Medical Institutions in India the most successful.*

Some other subjects of less importance are subsequently alluded to by Mr. Cornish, who concludes his admirable Report with a few observations regarding especial localities,

these are, however, of chief interest only to those who are intimately acquainted with them.

The whole essay is replete with practical and well arranged remarks, forming a valuable and interesting analysis of the accompanying tables, and we heartily thank the Author for his able and judicious commentary on them.

Surely with the co-operation of the civil authorities similar tables and reports might be furnished by other Medical Officers resident at large stations.

A Chart of the Principal Constituents of the Urine in Health and Disease, with short and easy directions for Analysis and the application of tests, showing at a glance the abnormal constitution of any specimen of Urine, deduced from examination of its Physical characters, and the disordered condition of the system indicated thereby. Carefully collated with the Works of BRIGHT, PROUT, CHRISTISON, BECQUEREL, WILLIS, G. BIRD, G. O. REES, L. BEALE and others, for use in Hospitals, Dispensaries and Private Practice. By WILLIAM STRANGE, M.D., M.R.C.P., Physician to the General Hospital, Worcester. London: H. RENSHAW, 356, Strand—1862.

WE have pleasure in noticing this very useful chart which is arranged in tabular form and which gives at a glance a great deal of really useful information. It is of considerable advantage, to those who are unaccustomed to carry out such enquiries, to have a ready means of reference to the best authorities on the subject of Analysis of Urine, and for medical officers whose libraries are small this chart will do good service in bringing to view, at a glance, the several steps of the investigation they have to undertake.

It forms one large sheet, printed in good type and very portable—or if mounted may be hung up for constant reference.

The leading topics explained are, with reference to the *Urine in health;* its quantity, colour, clearness, smell, reaction, specific gravity, &c., its principal Constituents, Urea, Extractives, Chl. Sodii, Phosphates, Sulphates, &c. with

the appropriate test for each. As regards *Urine in Diseases;* we find its Physical Characters, Constituent Elements, Chemical Reactions, Microscopic Appearances, and the result of these, as indicative of the certain disordered condition present, clearly and concisely stated. These points and many others of interest find appropriate record on this useful Chart.

The Mammary Signs of Pregnancy and of Recent Delivery. By J. LUMLEY EARLE, M.D., Resident Surgeon, Accoucheur to the Birmingham General Dispensary, &c., London: J. W. DAVIES, 8vo. pp. 34—1862.

IN this little work Dr. Earle again brings before the profession a short series of papers, which originally appeared as contributions to the "*London Medical Review.*"

The general estimate of the importance of mammary signs as indicative of pregnancy, or recent delivery, did not perhaps need the additional authority of his researches which do not advance our knowledge to any considerable extent; but, it may be well briefly to record the results at which he has arrived after devoting considerable attention to the subject, and after consulting some of the standard works relating to it.

Perhaps we shall best indicate our opinion of the nature of the work by a brief analysis of the conclusions at which the Author has arrived. This need not however be either long or very detailed.

Dr. Earle divides all mammary signs into two classes—"Minor" and "Major." Under the former of these heads he includes enlargement, pain, increased size of veins, and the white streaks produced by distension of the breast.

As regards the first of these subjects he dwells very properly on the difference between the feel of that which is simply deposition of fat, and the true knotty and nodulated sensation imparted by a breast in which the gland structure proper is becoming enlarged. *Pain,* he regards as of little value as an indication of pregnancy, and this is confirmative of experience which recalls cases where pain was felt only for a short period at the conclusion of the

period of gestation, or felt in its earlier months and then found to disappear. *Enlarged veins,* he regards as of considerable importance, as this condition rarely results from simple deposition of fat, or from sympathy with uterine affections. Additional confirmation of our belief, in the existence of pregnancy, based on this sign, is afforded if the veins observe, the arrangement of which such beautiful representations are given in the engravings in Montgomery's "Signs and Symptoms." The last of the minor signs of pregnancy are the *white streaks or scars,* which appear as the result of distension of the skin during the period of gestation; the very frequent absence of these marks lessens their value as signs, for though the presence of them is tolerably satisfactory evidence, their non-appearance is simply a negative indication as to the state of affairs.

As to the Major Signs of Pregnancy we may quote the Author's own summary of the chief points regarding them.

He first of all alludes to the condition of the primary areola—or that circular disc which surrounds the nipple of all women, and of men also. Of this he says (pp. 33, 34.)

7. "The increase of the diameter is most important in primiparæ.

8. The increase of the colour of the areola is most important in the latter months of pregnancy and in primiparæ.

9. The raised condition of the areola is characteristic of pregnancy, and is most frequently present in primiparæ.

10. A shining appearance of the areola like polished wood is very characteristic of pregnancy.

11. The secondary areola is a conclusive sign, and is generally most distinctly marked in primiparæ.

12. The nipple is of no, or very slight, importance in questions of pregnancy.

13. The branny scales on the apex of the nipple, though not characteristic of pregnancy, are of great value if they exist in large quantities, and if a small amount of fluid can also be expressed from the nipple.

14. The mere projection of the follicles is of no importance unless they are present in a large number; but are conclusive evidence of pregnancy if they contain sebaceous material.

15. The areola should be placed on the stretch in doubtful cases; (*a*) because if no follicles are present, those depicted in Fig. 3 may be brought into view by this means; (*b*) if follicles are present with

an apparent absence of the sebaceous matter, the artificial extension of the areola may make that secretion visible.

16. The follicles are seldom present in primiparæ.

17. In multiparæ the most important mammary sign during the early months of pregnancy, is the sebaceous-containing follicle.

18. In primiparæ the most important mammary signs during the early months are the presence of milk in the breasts, and the raised condition of the areola.

19. The mammary signs do not assist us much in determining the period of pregnancy at which a woman has arrived."

We must refer our readers to the Author's work for his elaborate description of the subjects referred to under heads 14—16. But, we seriously question the propriety of his last axiom: we have certainly in many instances derived the most valuable assistance from these signs, and, although there are many exceptions to the rule, we would expect in most cases (especially of youthful primiparæ) to receive considerable information from them as collateral evidence of the period of gestation at which the patient had arrived.

The work is illustrated by three pages containing six coloured lithographs by McFarlane of Edinbro'; but we cannot congratulate either the artist or the Author on these productions: the colouring of them is simply ridiculous and unnatural to the highest degree. Fig. VI. is however a good representation of the altered appearance sometimes presented by the areola shortly after parturition. We believe however that our Author is not quite correct in asserting that the change he describes is invariably observed and that it follows the regular course that he assigns to it.

Dr. Earle's little book is a good guide as to the general value of Major and Minor Mammary signs, and, to persons, not possessed of more comprehensive works on this subject will prove useful as such.

But any one who has read the works of Churchill, Dubois or Montgomery will find in this new addition to Medical literature little of novelty. Indeed the authors just named are apparently the source of inspiration to which Dr. Earle is indebted for the more valuable part of his observations.

The work is neatly got up and not expensive: both points of satisfaction to us to notice as reflecting credit on the enterprise of the Publisher.

A New and Rational Explanation of the Diseases peculiar to Infants and Mothers, with obvious Suggestions for their Prevention or Cure. By THOMAS BALLARD, M.R.C.S., Fellow of the Royal Medical and Chirurgical Society, &c. London: J. CHURCHILL, small 8vo. pp. 128—1860.

THE promising title of the above is not a prelude to any new fangled or theoretical notions of some eccentric author, as we might at first suppose, but a simple statement of the object and rationale of an exceedingly practical essay by an observant and well informed practitioner.

Mr. Ballard commences his work by a proposition "that "the exercise of the instinctive art of sucking under circum- "stances inflavourable to the infant obtaining food, is a prin- "cipal source of disease to infants and puerperal women."

It will perhaps be within the recollection of our readers that this is not the first time that Mr. Ballard has directed attention to this subject: but, omitting any wider application of his theory than the one alluded to in his "Proposition," let us hear his argument as regards the ill consequences likely to ensue from, and the morbid state likely to result as a consequence of, fruitless sucking by infants.

"Dr. Brown Séquard, in his 10th Lecture, published in the *Lancet*, says, 'The excitation of the nerves of taste produces an abundant reflex secretion of gastric juice, and also a flow of bile and pancreatic juice in the bowels.' The act of sucking being, par excellence, the mode to induce this excitation, it is obvious that these juices must be secreted abundantly during the exercise of this act; and if at the same time a supply of food is received into the stomach, the solvent power of the gastric juice is exerted upon it, and the first process of a healthy digestion results: but, should the *sucking* have been *fruitless*, or partially so, it will in all probability have been *forcible* and *prolonged*, and therefore attended by an excessive reflex secretion of gastric juice, which, not meeting with a proportionate supply of food whereon to expend its solvent power, acts upon the mucous coat of the stomach and intestines, and causes various degrees of injury thereto, viz., destruction of the folds of mucous membrane in the upper portion of the small intestine, known as the valvulæ conniventes, thinning and softening of the coats of the stomach and intestine, and, as an extreme effect, complete destruction of the posterior wall of the stomach itself.

The evidence of this process of injury to the intestinal canal being in operation, is the presence of those symptoms which immediately result from it, viz., abdominal pain, and the frequent and green stools to which sucking infants are so liable. A persistence of this morbid state causes many of those ailments which are usually attributed to Teething, but which are really remote effects, dependent upon the imperfect development of the various tissues of the body, which necessarily results from the gradual injury inflicted on the organs concerned in the first and most essential processes of digestion: these are exemplified in the skin by Erythema, Urticaria, and Eczema; in the system generally, by defective appetite, Anæmia, tardy growth of the whole body, and general debility; and probably the establishment of that condition of the system known as strumous; in the osseous system by imperfect development of the bones, giving rise, in the case of the long bones, to crooked extremities, and in the short bones to those various forms of carious disease which are apt to succeed to a very trivial local cause; and by the tardy growth of the teeth; in the nervous system by Laryngismus stridulus, Convulsions, Cerebral congestion, and Hydrocephalus; in the abdominal viscera, by occasionally causing Invagination of the intestine, or eventually producing the morbid condition known as Tabes Mesenterica; in short, all the diseases of infancy in which we can recognize a failure of the processes of growth and nutrition, may fairly be attributed to FRUITLESS SUCKING, as a principal, if not the chief cause."

The Author then proceeds to quote the works of Dr. Wade, of Birmingham, in support of his theory, and directs attention to the researches of that gentleman upon the subject of "*Infantile Lientery.*" Dr. Budd, also, in alluding to the softening of the stomach and intestines observed in infants who die in the 3rd or 4th month, observes, "this is very "commonly found in infants who die from the hydro-"cephalus or phthisis, and occasionally unconnected with "any structural disease, in infants who die of exhaustion "consequent on eruptive fevers, or an improper diet after "weaning." The same Author also details the more prominent symptoms of these cases during life: among these we may mention frequent vomiting, loss of appetite, great thirst, crying as if from pain—and frequently diarrhœa with *green* stools, &c.

The object of our Author is to account for these symptoms and morbid conditions as revealed post mortem, and he attributes them—and we think correctly, in many instances—to the excessive secretion of gastric juice which results from the constant sucking of an infant who is placed in circum-

stances unfavorable to its obtaining food thereby. Mr. Ballard, on this theory, suggests an explanation of some of the many cases of infants supposed to have died, at night, from being overlain by the nurse. The later theory as to the cause of death has been (as advocated by the *Lancet)* that it really arose from suffocation; but our Author suggests that they were instances of death from perforation of the stomach—the last result of the process of attenuation that had been going on, and which was brought to a climax by gastric juice poured out *at night* when the child in vain endeavoured to obtain food, when the mother's breast could not be reached—or when if reached, it was dry and exhausted. Two cases confirmative of this view are given and are worthy of all attention.

Mr. Ballard shows by analogy the probability of this cause of death: and, the green scour of calves and the peculiar conduct, puny development, and frequently early death, of the "darling pig" are appositely quoted in support of his views.

The Author combats the idea that the frequent motions of an infant just born are due to any purgative property in the colostrum, but rather refers them to fruitless, because feeble, attempts of the child to take the breast—or to the small supply of nourishment that is to be found usually in the breast of a woman just recently delivered.

The practical inference from these considerations should be borne in mind—they are, we fear, too often ignored.

We cannot follow through the detailed account, given by the Author, of the various maladies likely to arise from the same cause in more advanced infant life. But we may say that he has proved, we think fully, that erythema and urticaria are by no means unfrequent concomitants of that special morbid condition to which he is directing attention. The connection between these skin diseases and gastro-intestinal irritation is shown in five cases of persons of various ages; the last of these cases is especially interesting.

Another by no means rare affection—Thrush—is thus accounted for (p. 13).

"The true nature of the disease, I suppose to be, that the delicate mucous membrane of the mouth becomes inflamed, in consequence of excessive sucking, and that an inflammatory exudation results, which from its situation, being warm and moist, affords a very appropriate nidus for the growth of the Oidium which is found so

universally growing under circumstances equally favourable to its nature. The accompanying enteric symptoms coinciding with those I have previously described as resulting from fruitless sucking.

The best confirmation I can adduce in proof of the correctness of this opinion, is the fact, that in all instances where I have been able to make my views of the cause of the disease understood, no case of Thrush has occurred; and in addition to this the relation of some cases of which I have notes, where I have successfully treated the disease in accordance with them."

These remarks are confirmed by three cases, in which the Author's treatment seems to have been as judicious as it was successful.

In connection with this subject Mr. Ballard directs attention to the faulty construction and careless management of feeding bottles; and, he gives a case (p. 18—19), illustrative of the very common defects to be found in these very useful instruments. We direct attention to the Author's remarks, because in this country the use of feeding bottles is not only frequent, but in many cases inevitable, and the attention of Medical men to little matters of this kind may save parents and children a good deal of mental and physical annoyance and may materially lighten the demand for professional visits. The Author praises very highly the *Biberon Darbo,* the construction of which he explains: and the chief merit of which is that it presents "a firm point "d'appui to which the child can fix its tongue and jaws, "and then by an effort of sucking a vacuum is formed in its "mouth communicating with the cavity in the bottle." Care as to these requirements, which are easily fulfilled, would render this kind of apparatus a really invaluable adjunct to every nursery. We have, for some years, devoted a good deal of attention to this subject, and we fully agree with Mr. Ballard who esteems highly a good nursing bottle, and who equally lustily condemns those in common use.

Having fully explained his experience in regard to skin affections dependant on insufficient nutrition, the Author next considers the nervous disorders of children. His remarks on this subject are so true and so valuable practically, that we desire to present them in his own words (p. 23—24.)

"The various affections of the nervous system, so common in infancy, seem to depend very much upon "Fruitless Sucking," as their remote cause.

They are probably manifestations of a defect either in quantity

or quality of the pabulum necessary for the growth or nutrition of the nervous centres—an error which may be easily conceived to occur, when we consider the injury that is inflicted upon the organs concerned in the first processes of digestion, by the continual and excessive flow of gastric juice through the stomach and intestines. And if it is a fact that these nervous disorders only occur after a continuance for some time of green-stool diarrhœa, I think we may fairly assume, that the above explanation of their cause is not an extravagant one. I have already quoted at page 3, the observations of Dr. Budd, upon the common occurrence of softened stomach in those infants who die of hydrocephalus.

The irritation of teething is a favourite cause to which the affections are attributed. I feel that I am treading on very delicate ground when I say, that I think the process of dentition has been held responsible for a vast amount of disease, in the causation of which it was in no respect concerned. I have observed, and reflected very carefully upon this subject, and have seldom or never been able to satisfy myself that any illness depended upon the development or evolution of the teeth. If a child appears to be only hot and feverish, in all probability it will be suffering a slight attack of catarrh, and a physical examination of the chest will afford evidence of pulmonary congestion, which will yield to appropriate treatment. If diarrhœa is the symptom, by a careful inquiry it will be found that the child has either eaten something indigestible, or has been sucking excessively. If it is a fit of convulsions that has occurred to the child, I believe that in all cases there will be a previous history of green-stool diarrhœa. Should an infant be attacked with drowsiness and frequent acts of vomiting, the little patient's life depends upon the view adopted by the practitioner; if only the gums are lanced, and some medicine administered, with the view of quieting the stomach, or removing something that may have disagreed, the child will in all probability die; but if congestion of the brain be diagnosticated, and a leech or two applied, the life will most likely be saved, and lancing of the gums may safely have been omitted."

In according our general acquiescence in the foregoing, we may remark that we have ourselves before observed that the children who usually suffer most from dentition are those who are ill favored and ill fed, or over fed, and that we think in many instances the prevalent theory not to check the diarrhœa of teething is founded in error. To give opium for such a purpose is wrong—but the adoption of suitable measures, tending to secure a fair amount of nutrition, and to prevent an excess of gastric disturbance will at once lessen the diarrhœa and the irritation referred to teething.

Of nervous affections generally, to the consideration of which the Author devotes one of the most interesting chapters of his work, fruitless sucking may be fairly considered a leading cause, and, as we shall see even more appreciable lesions are not unfrequently referable to a similar source.

We regret that we are not able to enter upon a full consideration of these topics which are of deep interest, and which may be inferred from the following passages, in which Mr. Ballard summarises his experience, and the apparent conclusions to be drawn from a set of illustrative cases which he details. (p. 45.)

1. "That the nervous disorders of infants may, and do occur independent of the process of teething.

2. That they are always proceeded by a period of intestinal disorder, which may be prevented.

3. That the symptoms of pressure on the brain, indicated by vomoting, drowsiness and giddiness, may in most cases be effectually relieved by a judicious abstraction of blood, if it is adopted early; but if the symptoms are allowed to last for some days, the treatment by bleeding is then useless.

4. That Hydrocephalus may exist to a considerable extent without itself interfering materially with the child's health, provided the process of ossification of the cranial bones has been arrested; but that it injures materially the mental faculties and in this way, we may possibly account for the stupidity of many children, who, under more favourable circumstances, might have developed sound brains, and consequently bright intellects."

In the following pages the Author considers a secondary class of affections more or less referrable to the same cause. Upon these, however, we do not purpose to enter. But we consider that his remarks upon the "future morbid conditions resulting from fruitless sucking," are well worthy of perusal.

The last topic upon which he enters is that of the various sources whence fruitless sucking arises. This may be considered as the summary of his opinions, and we reproduce them, feeling that they are eminently practical in value and should be borne in mind by all. (p. 70.)

"I have thus traced most of the diseases peculiar to infancy to one common source, namely, "Fruitless Sucking," which seems to take place for the most part in one of two modes; either the mother's breast does not yield sufficient milk to satisfy the infant's craving; or the teat with which a sucking bottle is fitted is inefficient.

The consequence of an infant being subjected to either of these varieties of the error is, that it is almost sure to take to sucking its thumb or fingers ; and when this habit is established, it becomes a constant cause of disease and debility, and not only of disease and debility, but of disfigurement also. All those persons whose upper jaws are arched so prominently forward, have sucked their thumbs when infants, and have probably suffered more or less of the morbid and debilitating results.

I have observed, that when the two above mentioned sources of fruitless sucking are avoided, the children do not acquire the habit of sucking their thumbs ; but when it has been acquired, measures should in all cases be adopted to cure it. The beneficial effects of this course are exemplified in case 18. I need scarcely remark that the custom adopted by some nurses, of giving an infant a raisin, or some bread and sugar in a piece of rag, to suck, in order to keep it quiet, is one fraught with the most serious ill consequences in reference to its future well being, or even life."

In conclusion we are favored with certain considerations of the ill effects, *upon mothers,* of fruitless sucking by their infants.

We regret that we cannot now enter upon these topics, but we commend them to the consideration of our readers.

The whole work is eminently deserving of the highest praise. Dealing with subjects of every day occurrence it points with unerring certainty to a faithful source of disease —a source long unrecognized and yet demanding our best attention for its remedy.

We would earnestly recommend an early perusal of Mr. Ballard's work to all interested, professionally or personally, in the subject of infant life, and its discomforts and their alleviation.

[We regret that the unusual demand upon our space prevents our insertion of detailed Reviews of the recent work of Mr. Baker Brown on Ovarian Disease, and that of Mr. Milton on Gonorrhœa. We hope these will appear in our next Number.

At the same time we will consider the recent works of Davy on Army Diseases, Moore on Health in the Tropics, Gairdner on Practical Medicine, Brande and Taylor's Chemistry, &c.]

PART III.

MEDICAL MISCELLANY.

No. 1.—*Concussio Cerebri.* By J. W. MUDGE, M.D., Surgeon Major, Madras Army, Surgeon 2nd District, Madras, &c.

VENKETASEN, Æt. 19, Male, Malabar.

September, 1862.—Was brought to hospital, at 12 o'clock at night on the 15th, in a state of insensibility, with a weak, slow pulse, breathing regular and not stertorous; was stated to have fallen from a cocoanut tree of considerable height; had a lacerated wound of the left forearm and swelling and obscure crepitus of the right wrist. There was dried blood in the left meatus auditorius, and his friends stated that immediately after his fall, a good deal of blood was discharged from his left ear. Surface of body was very cold and pulse weak on admission. Some diffusible stimulants were given.

16*th.*—Is still insensible; pupils sensitive to light; pulse slow but regular; breathing natural; has passed urine during the night; no action of bowels; swallows fluids when introduced in his mouth.

℞ Enema Terebinthinæ st.
℞ Hydr. Chlorid. gr. iv.
Pulv. Jalap. Co. ℈ i. st.
Right arm bandaged, with splint.
Head shaved and ice applied.

17*th.*—No change; has continued calm; quite insensible; no discharge from ears; bowels have not acted; enema came away unchanged; skin natural; pulse 66; pupils contracted. Had this morning,

Calomel gr. iv., Ol. Croton. gtt. $\frac{1}{4}$;
with Syrup.—this was swallowed—passed urine.
Cont. ice to head.
Repeat Enema.

18*th.*—Bowels moved last night; passes urine at intervals; pulse 66; skin and respiration as before; takes nourishment occasionally when introduced into his mouth; moves his limbs a little more to-day, and appears sensible to flies resting on the face and limbs.

Lotio Pot. Chlor. and lint over left arm.

Since noon yesterday has yawned several times, has just done so this morning.

Cont. Ice.

19*th.*—Little or no change; mouth moist; pupils perfectly sensible to light; bowels opened twice; passes urine; appears like a person in tranquil sleep; his attendants state that he rolls about a good deal at night; swallows nourishment; pulse 66.

Cont. Ice.

20*th.*—Opened his eyes last evening and, according to his attendant's accounts, kept them open for half an hour; pulse slower this morning, about 48; no other change.

Cont. Ice.

22*nd.*—Partial consciousness since yesterday; passes urine and fœces; takes nourishment; pulse 54; skin natural.

Cont. Ice.

23*rd.*—Somewhat better; opens his eyes and has an intelligent look; pulse 60; no stool.

℞ Ol. Ricini ℥ss. st.

Cont. Ice.

24*th.*—Is just the same; one stool from injection; oil did not act.

Repeat Enema Purgans.

Cont. Ice.

25*th.*—Is somewhat more conscious; bowels opened once; tongue exceedingly foul; pulse as before.

℞ Inf. Cascarillæ ℥ i.
Acid Hydrochloric. dilut. ♏ vi.
Tinct. Gentianæ Co. 3 i. *m.* ft. haust. ter die.

26*th.*—Is more sensible; put out his tongue when requested. It is excessively foul; bowels very slow.

℞. Pulv. Jalapæ Co. ℈ ii.
Tinct. Rhei Co. ℥ ii.
Aq. Menth. Pip. ℥ i ss. *m.*
Ft. haust. stat.

Cont. Ice.

One measure of wine.

27*th.*—Is very dull this morning; pulse 50; no stool.

Omit Wine.

℞ Ext. Colocynth. Co.
Scammonii. aa. gr. iii.
Ol. Tiglii gtt. i.
Syrup qs. *m.* st.

Repeat Enema Terebinth. si opus sit.

29*th.*—Spoke yesterday for the first time; is now perfectly sensible; complains of great hunger; tongue much cleaner; bowels opened freely; pulse slow and weak.

Cont. Mist. Tonic.

Omit Ice.

30*th.*—Perfectly rational; complains of deafness of left ear; bowels not open since yesterday.

Cont. Mist.

October 20*th.*—From the date of last report this lad has continued steadily to improve. He complained at first of deafness of left ear, but this gradually diminished; all his functions are healthy; his memory has not suffered; the fractured bones of the arm are firmly united.

Discharged.

Remarks.—The above case appears to present several features of interest. It seems probable that there was slight fracture of the base of the skull involving the petrous portion of the left temporal bone. The long continuance of insensibility (fifteen clear days) and the slowness of the pulse, point to a certain amount of effusion and consequent pressure; but the brain substance must have escaped injury. Ice was sedulously applied, in bladders, day and night for fourteen days so as to envelope the greater part of the head, and in this consisted the most important part of the treatment. It appears a remarkable illustration of the benefit which a judicious use of ice may confer. This is no doubt a most powerful agent in checking inflammatory action, and has lately been prominently brought to notice in the essay of Professor Esmarch of Kiel, as translated in one of the recent volumes published by the Sydenham Society in 1861.

No. 2.—*Case of Rupture of the Bladder from external violence. Recovery.* By H. C. Brodrick, M.D., L.R.C.P. Ed. Residency Surgeon, Indore.

Rajah Ram, aged 12 years, was admitted into the Charity Hospital at Indore on June 14th 1862, at 6 P. M. Three days previously whilst employed on the excavations at Munglia, a village distant eight miles from Indore, a mass of earth fell upon him. Immediately after receiving this injury, blood flowed from the meatus urinarius, but no urine was passed from that time to the present, a period of more than 70 hours.

On admission I found the prepuce, scrotum and cellular tissue about the perineum enormously infiltrated with fluid; there were erysipelatous patches visible about the perineum and a considerable degree of tense painful swelling above the pubes. He was low and weak, and his pulse very small.

It was plain that the bladder had been ruptured by the mass of earth falling upon the lad whilst the viscus was distended with urine.

I passed a catheter with some difficulty and drew away a quantity of fœtid and bloody urine; the instrument was then tied in the bladder, and I freely cut into the infiltrated cellular tissue of the prepuce and the perineum.

Much fluid poured at once from these incisions.

Ordered Calomel gr. i,

washed down with a draught containing Carbonate of Ammonia and half a grain of Opium. A large poultice to be applied to the parts, covering the whole perineum. The urine began to distil from the mouth of the catheter as fast as secreted and fluid continued to pour from the incisions for several hours. During the night and following day he continued weak and low with a very small pulse, but no signs of peritoneal inflammation showed themselves.

He was ordered strong broth and bread and milk, half an ounce of Port-wine every three hours, and the following draught.

Carbonate of Ammonia, grs. iii.
Sulphate of Quina grs. ii.
Decoct. Cinchonæ ℥ ½.
Every three hours.

During the afternoon of the 15th the pulse grew more firm and the bowels were relieved. As the scrotum looked erysipelatous, I cut freely into it and extravasated fluid at once commenced to distil from the incision.

On the 16th the integument above the pubes felt hard and *brawny* to the touch, but was not tender; the lad's eye was bright and intelligent, and he remained cheerful and uncomplaining.

On the evening of the same day his skin became hot and his pulse rose to 120 beats in the minute. Still he made no complaints of pain or tenderness about the belly.

17*th.*—Pulse still 120, but softer than on last night; tongue clean; bowels were opened in the morning, evacuation fluid and bilious. The hard and brawny feel in the supra-pubic situation remains as before, but the only pain he complains of he refers to the thighs.

I injected some ounces of warm water through the catheter into the bladder, the instrument being stopped up by the pus which is passed in considerable quantity with the urine.

18*th.*—Urine loaded with pus,—I ordered the catheter to be frequently washed out with warm water thrown into the bladder with a syringe. There is, to-day, a slight degree of pain over the brawny integument of the hypogastric region, the pulse remains very fast, still 120; in other respects he is doing wonderfully well.

The *brawny* swelling which was most marked midway between the pubes and umbilicus increased somewhat during the next few days, and the bowels became relaxed, the skin was hot, and the pulse small and rapid as before. The wine and broths, &c., were continued, and I ordered him, in lieu of the Quinine and Ammonia, as follows—

Pulv. Ipecac. Comp. grs. iii.
Hyd. c̄ Creta, gr. i.
Every four hours.

These powders were taken during the 18th and 20th, on which day I thought the swelling above the pubes less in degree, but the boy was fretful and dispirited, and complained of achings about pubes, perineum and thighs. The diarrhœa was well under controul, and from this date, when I noticed the first sign of dispersion of the supra-pubic swelling, I augured well of his case.

21*st.*—A good deal of fever about him to-day; tongue rather dry but clean; pulse very rapid. Whilst pressing very gently on the hypogastrium, just after syringing out the bladder through the catheter, some of the water thrown in was forced through the still gaping incision on the right side of the perineal raphè in a jet.

The diarrhœa is much less in degree and the Hyd. c̄ Creta is reduced to half grain doses with three grains of Dover's powder.

Vespere.—There is a slough detaching from the incision in the perineum that communicates with the wound in the bladder.

Bowels opened twice since last report. He had had very broken sleep on the previous night, I gave him six grains of Dover's powder at bed time, and the following stimulant draught.

Yolk of 1 egg.
Port-wine oz. i.
With sugar, nutmeg and hot water—egg flip in fact.

He passed a good night: the bowels were opened twice during the next day, the evacuations being very loose. There was no change in the other symptoms.

The egg mixture was repeated twice during the day and the opiate on the night of the 22nd.

On the 23rd and 24th I was prevented by illness from seeing the boy, but the stimulants and opiates were persevered in. On the evening of the 25th I found the lad much improved, the perineal and scrotal swellings very much reduced, and the brawny swelling above the pubes quite dissipated.

The slough had separated from the perineal incision and was a large tough mass of cellular tissue. The urine is now voided partly through the open mouth of the catheter and through the perineal

incision. Tongue clean and moist; pulse frequent but much softer than of late.

Repeat wine, egg mixture and opiate.

He varied very little during the next few days, but on the 27th had a paroxysm of fever and afterwards slept badly. The pubes was tender to the touch, though all the brawny swelling had disappeared. Ordered

℞. Quinine, grs. iii.
Acid. Sulph. dil. ♏ vi.
Tinct. Hyosciami ʒ i.
Water, ʒ iii.
Misce.—⅓rd to be taken three times a day.

29*th.*—No fever yesterday. As the communication between the wounds in the bladder and the perineum seemed perfectly free, I, this morning, removed the catheter, considering that its presence might be a bar to the healing of the lesion in the bladder.

30*th.*—Doing well: a few drops of urine passed today by the meatus urinarius.

During the next few days he suffered from restlessnes and slight fever. On the 4th I found an abscess in the integument of the scrotum which was very tender and painful; I opened this at once and gave him instant and entire relief.

On the same day he passed *all* the urine by the natural passage in a full stream, and on the morning of the 5th it flowed by the perineal wound in chief.

11*th.*—Doing very well. Urine passing in part by the perineal wound, partly by the meatus. On making strong expulsive efforts the urine can be projected through the perineal wound.

He is allowed wine liberally and a very nutritious diet—broth, eggs, sago, vegetables, milk and leavened bread.

On the 20th he was out of bed and walking about the ward. Urine ordinarily came through the perineal wound, but occasionally by the meatus in a full stream. The perineal wound had by this time assumed the ordinary appearances of a sinus with callous edges.

When the bladder is tolerably full, and he is desired to make water, he can do so immediately in a full stream through the wound, projecting the urine about a foot from him. He can retain his urine perfectly, and it never seems to escape from him involuntarily.

He now rapidly recovered flesh and strength, and, although the fistulous communication remained unaltered, I considered him to all intents and purposes cured, and he went to his home at the end of the month.

Remarks.—One of the first questions naturally arising from the consideration of this case will be "*where* was the bladder ruptured?"

The happy fact of there having been no peritonitis, the usual fatal result of ruptured bladder, leads us to conclude that the viscus was rent at a point uncovered by that membrane.

When the mass of earth fell on the lad the bladder was in all likelihood distended with urine, else it might have escaped, for the mass cannot have been very large or the pelvis would have been fractured I think.

The long axis of the bladder is directed from above obliquely downwards and backwards.

The mass of earth impinges on the hypogastric region pretty equally we will say, and I imagine the stress would be on the point opposite to the part most prominent, viz., the lower pole of the long axis; in other words on some point of the inferior fundus. Here it is uncovered by peritoneum.

The fact of the lad having, on his recovery, such complete power of retention, and of micturating at will, through the fistulous opening, suggests that the lesion of the bladder must have been very near the neck, where the muscular fibres of the detrusor are inserted into the isthmus of the prostate gland, and into a ring of muscular tissue which surrounds the commencement of the prostatic portion of the urethra.

The external surface of the base of the bladder corresponding with the trigone is separated from the rectum by a thin layer of fibrous membrane derived from the recto-vesical fascia.

Here, I imagine, the rupture took place, and *hence* the extravasated urine filtered into the neighbouring areolar tissue.

I have assumed that if the rupture had been in a part covered by peritoneum, peritonitis *must* have supervened; but a remarkable case is reported by Mr. Bower, in which a man died on the 6th day after receipt of injury from rupture of the bladder, and after death, although the peritoneum was lacerated, and the cavity of the abdomen filled with dark colored urine, *there was no sign of peritoneal inflammation.* (Vide Taylor's Med. Jurisprudence, Ed. 5th, page 336.)

Conversely, peritonitis may arise although the serous membrane be uninjured in the accident of rupture of the bladder.

A man kicked another in the pubic region from behind. The man died from peritonitis in 35 hours. On inspection the blader was found ruptured, *near its neck*, for about half an inch, immediately above and to the left of the prostate; the urine had become extravasated into the cellular tissue of the scrotum; but although there was extensive inflammation the peritoneum was not lacerated. (Idem).

What was the brawny swelling above the pubes?

I imagine it was caused by effused blood which followed the impact of the mass of earth, and by the exaltation of the processes concerned in effecting its absorption.

There was no perceptible ecchymosis in this region.

This seems strange, but I find on reference to Taylor's Medical Jurisprudence, (Ed. 5th, page 309,) a case of rupture of the bladder from a blow on the lower part of the abdomen. He died four days after the accident. There was no mark of bruise or ecchymosis on any part of the abdomen. Again at page 334, he says, "when these ruptures (of the bladder) are produced by blows they are rarely accompanied by the slightest mark of ecchymosis or of injury to the skin."

The books that are available, for reference, up-country, are few in number, and I have found but scant records, of such cases as that of the boy Rajah Ram, on my shelves.

Fergusson says (Practical Surgery, 3rd. Ed., page 709) "of all the viscera here (in the pelvis) this (the bladder) is most apt to suffer, and if there be laceration, and its usual consequence, infiltration of urine, there is barely a chance for the patient."

Mr. Syme, (in his "Contributions") gives a case of rupture of the bladder, below the line of reflection of the peritoneum, in which the patient recovered, free incision having been made to give exit to the urine which was extravasated between the abdominal muscles and skin.

I regret exceedingly that I have not got the "Contributions" to refer to.

In South's translation of "Chelius' System of Surgery," the translator adds to Chelius' Commentary, "the most common

injury of the bladder, is its bursting or tearing in fracture of the pelvis caused by a heavy weight passing over it. I have never seen any other kind of wound." At page 334, Taylor's Med. Jurisprudence, 5th Ed., I find "the spot in which rupture (of the bladder) commonly takes place is in the upper and posterior part, where the organ is covered by the peritoneum. The aperture is sometimes large, at others small; but the effect is, that the urine becomes extravasated, and death takes place sooner or later from peritoneal inflammation. It is commonly stated that these ruptures when attended with extravasation of urine into the peritoneal cavity are uniformly fatal; *but if the rupture occurs in the under part of the bladder, or the urine finds its way into the cellular tissue, the prognosis is not so unfavorable.*"

I had never seen a case of ruptured bladder before, but of course the indications for practice were clear enough in this one.

I was much struck at the time by the improvement that took place in the lad after he had taken the Dover's powder and mercury with chalk for some days.

These remedies may have subdued a lurking proclivity to peritonitis, at any rate they were of undoubted benefit to the patient.

What is this mysterious power of calomel and opium?

We often prescribe it empirically, and when judiciously exhibited it is often an invaluable friend to us and our patients.

Who has not seen the wonderful change it sometimes works in almost hopeless cases of remittent fever, with dry glazed tongue and baked and parched buccal membrane: occasionally too in the uræmic poisoning after cholera?

The stereotyped "book" effects of calomel and opium are quite insufficient to my mind to explain its occasional action.

The determined exhibition of stimulants from first to last, had, no doubt, a great deal to do with the successful issue of this case, and our efforts were not a little aided by the bright and hopeful spirit evinced by the poor lad himself.

The question is now whether we should not attempt to close the fistulous communication between the bladder and the perineum and thus divert all the urine to its natural channel?

I did not attempt this after the convalescence of the boy, for the air of my hospital was bad at the time, and I thought he ought to get away to his home and avoid the diarrhœa and dysentery then prevalent in our wards.

I was very unwilling too to jeopardise the prestige of this very interesting case by attempting an operation, the result of which was very doubtful. In a bed close to Rajah Ram was a patient on whom I had operated for stone by the usual lateral incision four days before the admission of Rajah Ram.

I allude to this because the analogy of the two cases often occurred to me: in both there was a wound of the bladder (or prostate) communicating with the surface—in the one caused by the scalpel for the removal of a stone, in the other necessitated by the effects of a low type of inflammation lit up by the presence of an acrid fluid, the urine, filtering into parts endowed only with a low grade of vitality.

Moreover the incision I made in the perineum of Rajah Ram, to allow exit to the extravasated urine, was in the very situation of the usual lithotomy incision, but on the right side of the raphè.

I had cut into the left side too, but this wound soon healed, whilst from that on the right side a large slough was cast off and a permanent fistulous communication established.

It is probable that the rent in the fundus of the bladder was on the right side of the mesial line. We thus get, I think, to the precise locale of the rupture in the bladder.

Postscript.

Since writing the above I have found in the *Edinburgh Medical Journal, No.* 87, *September* 1862, notes of a case of ruptured bladder and urethra, treated by Ebenezer Fleming, M.D., Stranraer Wigtownshire.

In this case a railway labourer, Æt. 26, whilst at work, was struck on the loins by a mass of earth of about one ton's weight, which happened to fall upon him.

During his journey from the site of the accident to the Surgeon's house, he complained of pain in the lower part of abdomen and an inability to make water, although his desire to do so was very strong. Blood oozed from the urethra. He had passed no urine for some hours previous to the accident.

With much difficulty a catheter was passed into the blad-

der, half a cup full of *pure* urine flowed. It afterwards became very bloody, and on pressing the left groin a small quantity of pure blood was passed which speedily coagulated.

Subsequently great difficulty was experienced in introducing a catheter for the second time, but it was surmounted, and the instrument was tied into the bladder.

Blood and urine continued to flow from the catheter, peritonitis set in, pulse mounted from 72 to 264 beats in the minute, and the patient died 42 hours after the accident.

No post mortem was instituted, but manipulations with the catheter easily determined a tear in the urethra, which appeared to extend towards the left side of the bladder.

Dr. Fleming was of opinion that the rupture commenced near the left side of the fundus and extended through the neck of the bladder to the urethra, and that it was at a part covered by peritoneum. No fracture of the pelvis was discoverable and there was no external abrasion.

No. 3.—*Cancer of the Penis. Amputation.* By Thomas Lowe, Medical Officer, Madras Sappers and Miners.

The following case is one of interest, inasmuch as it is an instance of true cancerous growth, occurring in a man not advanced in age, not complicated with syphilis, or condyloma, or phymosis—the usual complications noticed in growths of a more or less malignant character in this organ.

A Ryot, Æt. 37 ; married ; the father of three children ; a tall, emaciated, distressed-looking man ; has suffered for the last six years from disease of the penis, for which he now seeks relief.

He states that six years ago he perceived a small, hard, painful tumour upon the left side of the glans penis, close to the corona glandis, which continued to increase in size and become more painful at times for two years.

During this time an occasional watery discharge took place. About the beginning of the *third* year the diseased part invaded the whole of the glans penis, which then began to assume a rugged, nodulated appearance ; small patches of ulceration ensued, and a fetid ichorous discharge took place. It now began to grow rapidly in various points ; it became excessively painful ; deprived him of sleep; his appetite and spirits suffered, and he lost flesh.

The cancerous mass has grown steadily up to the present time. It now looks like a pale, *rosy bunch of grapes* of tolerable size. There are two or three ulcerated patches upon it, and from these there is a fetid, palish ichorous oozing.

The portion of the disease which has rested against the scrotum has caused four or five ulcers, *and in this part of the scrotum there are several nodalated scirrhous masses:* evidently a spread of the disease *by contact.*

The glands in the groins are tender but not much enlarged; he has lumbar pains.

His father died from *syphilis;* his mother from pulmonary disease. He himself believes the disease to have originated in a syphilitic taint transmitted from his parent, as he has never had syphilis, phymosis, or warts.

The only medication he has had, has been the application of soothing vegetable poultices.

Amputation of the part being the only thing likely to give him relief, was recommended, and performed under the influence of chloroform on the 9th instant.

The pathological specimen was forwarded to the Museum of the Madras College, for preservation.

I can hardly hope for more than a temporary relief to this poor man; yet, as this disease—Cancer of the Penis—appeared in a *young* man, and as the glandular contamination does not appear to be advanced, he may live for months, perhaps years, without a recurrence of his late severe sufferings.

He is now taking a mixture of Iodide of Potassium, Fowler's Solution, Tincture of Iodine, Laudanum and Decoction of Bark, as a prophylactic against a further development of the disease.

The scirrhous portion of the scrotum will be extirpated as soon as the stump of the penis has healed.

September 11*th*, 1862.

Further report on 26*th December.*

Since the man was discharged, he has enjoyed better health than he has done for years. He has gained flesh, and looks younger, by ten years, than he did before the operation.

He has no lumbar or inguinal pains, the stump looks healthy; the indurated nodules upon the scrotum have nearly disappeared. He objects to their removal, as he says they are dying away.

He has taken Arsenic, with Iodide of Potassium and Tincture of Iodine, Opium and Decoction of Cinchona with evident benefit. He and his friends are very pleased with the result.

No. 4.—*A Case of Criminal Abortion.* Reported by MOONESAWMY, 2nd Dresser.

Moothee, Æt. 36, Caste Pariah, convicted prisoner, labourer by trade.

A widow and mother of 7 children; 3 living, the eldest of whom is aged 14, and the youngest 7.

Was brought to the Civil Dispensary by Mr. Brown, Police Inspector, with a request that she should be examined, and that he might be furnished with the necessary certificate for her committal by the Magistrate, on a charge of Criminal abortion.

On the morning of the 21st July 1862, Mr. Apothecary Matthews, then in temporary charge of the Civil Dispensary, Chingleput, examined the woman per vaginam, and feeling a hard substance in the uterus, and suspecting its nature, he withdrew his hand, and directed me to proceed with the examination. The prisoner was of robust make, but appeared to be exhausted, eyes sunk, abdomen soft and loose, breasts discharged milk on pressure, lochial discharge present. After adopting the usual preliminary measures, I introduced my fingers into the vagina, which was relaxed, hot and somewhat dry, and the lining membrane of the uterus soft and unequal, with its os dilated. I felt a hard substance lying flat in the bottom of the uterus shaped like the letter **V** with its angle directed forwards: this, on extraction, was found to be a piece of stick, the midrib of a cocoanut leaflet, 5 inches in length, ¼ in circumference, with a piece of white rag wrapped round it at one end, and partially broken in the middle.

The prisoner denied having adopted any violent measures to procure abortion. On shewing her the piece of stick extracted from the uterus, and asking to account for its presence, the sight of the stick startled her somewhat, and forced her to disclose her secrets at once, when she gave the following account.

Having been frequently annoyed by her relations as to her unchastity, she determined to cause abortion, and had recourse to the acrid juice of milk hedge, (Euphorbia tirucalli) in which was soaked the rag, above referred to as being found wrapped round the stick, and that it was introduced by herself into the uterus; no further information was now got.

She corroborated these statements before the Joint Magistrate, but completely deviated from them at the Session Court, which may be seen from the sentence by the Session Judge.

A few days after her incarceration in the jail, she became

an inmate of the hospital for treatment, when, on being again questioned, she at first denied her original declarations and stated that three or four days previous to miscarriage, herself with another woman went to the jungle adjoining their village to gather some firewood: that she suddenly felt a chilliness, followed in a few hours by fever, and pains in hands and legs: continued in this state for three days, and on the morning of the fourth she was delivered of a fœtus six months old, which event, it appears, she only came to know the next morning, having been quite insensible during her miscarriage. She attributed the occurrence to the deeds of an evil spirit the "devil;" but subsequently she confessed the truth and completed her original statement by saying, that after the failure of Chittramoolum (Plumbago Zeylanica) root, and garlic, which she said were common remedies among the natives to procure abortion, she had recourse at last to milk-hedge: three or four hours after the application of the stick prepared as above described, she experienced a burning sensation and heat in the uterus; subsequently she became feverish and somewhat delirious; some nine hours after, she gave birth to a still-born fœtus about six months' old, which was also brought to the Civil Dispensary in a state of decomposition, but still sufficiently retaining the form and size to identify its age.

Among the several mineral and vegetable substances resorted to by the natives to cause abortion, Euphorbia tirucalli or milk-hedge juice, known by the name of Kullypaul in Tamil, is considered by the natives as one most powerful in its effects, from the acrid and irritant properties of its juice, which are evident by the facts of the above case; and I am also told by some native doctors that several other species of Euphorbia, such as Euphorbia antiquorum (Tamil, Satharacully) and Euphorbia tortilis (Tamil, Theroogoocully) have also the same effects.

Although the desired object was attained by its use in the present case, its disadvantages are also evident in the sufferings of the criminal, from its acrid and irritant properties, which would have decidedly proved more dangerous to others of more delicate constitution.

† * * * *

I have thought it advisable to publish this case as being of some interest in a medico-legal point, and as it shews the quality of the acrid milky juice of Euphorbia tirucalli as a means of producing abortion, in addition to the other articles used for the same purpose and mentioned by Dr. Shortt, Art X, Vol. III, Madras Quarterly Journal of Medical Science.

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† We omit the finding of the Court in this case, as being unimportant to the chief object of this contribution.—Ed. *M. Q. J.*

No. 5.—*Case of Abscess of the Lung in a young child; Evacuation; Recovery.* By W. N. Chipperfield, Acting Garrison Assistant Surgeon, Fort St. George.

16*th May*, 1862.—I was requested to visit S. S., an Eurasian male infant, aged two years. I found him feverish, with slight cough, high pulse, quickened respiration, and warm, dry skin; tongue slightly furred; secretions reported to be natural. I learnt that the child had had a feverish attack, apparently from cold, three weeks previously, and that he had been taken to Palaveram for change of air, but that no benefit had resulted. He had previously been under my care on several occasions, once for an attack of cholera, and I knew him to have passed ascarides lumbricoides.

℞. Santonine gr. ii.
Sacchari gr. v. Ft. Pulv.
to be taken at bed time.
℞. Ferri et Quinæ Citratis gr. ix.
Vini Ipecacuanhæ ♏ xxx.
Aquæ Font. ʒ vi. Misce.
Ft. mist. A teaspoonful to be given thrice a day.

17*th*.—One ascaris lumbricoides passed. Seems about the same. Has not commenced the steel medicine as yet.

Continue.
Diet to consist of milk and water.

19*th*.—More feverish; cough very troublesome; respiration very rapid; breath fetid. On percussion, lower half of right lung very dull. Auscultation performed with the greatest difficulty on account of the child's screams, but tubular breathing very evident at the lower part of the middle lobe, and minute crepitation now and then heard over the lower lobe of the right lung. Stools scanty and containing flocculent mucus with scybalæ. Countenance very pallid, and he is evidently much distressed in breathing.

℞. Santonini gr. ii.
Sacchari gr. iv. Ft. Pulv.
to be taken at bed time.
℞. Quinæ Disulphatis gr. ii.
Potassæ Chloratis gr. xv. Misce.
Fiant Pulv. vi.
One to be taken in honey three times a day.

A wine glass full of broth every three hours; turpentine stupes to right side of chest.

21*st*.—Fever increased, but showing decided intermissions; bowels freely opened, but no worms discharged; breath extremely fetid,

giving suspicion of gangrene of a portion of the lung having occurred. Auscultation impossible from the child's restlessness and cries.

℞. Liq. Ammon. Acetatis ℥ i.
Potassæ Chloratis ℈ i.
Decocti Cinchonæ ℥ v. Misce.
Ft. mist. A table spoonful to be taken every three hours.
Continue the broth. 2 oz. of sherry during the day.
Repeat Turpentine stupe.

23*rd.*—This morning the child was seized with a very violent fit of coughing, followed by retching; expectorated about 4 oz. of crude pus mixed with tenacious mucus and a little blood. Fever high; respiration very rapid; dislikes the broth and wine and calls for water.

Repeat mixture. Continue nourishment.

25*th.*—Has been evidently relieved by the evacuation of the pus. Cough less but still troublesome. Pulse 145; loud gurgling heard in the lower lobe of right lung; bowels regular.

Repeat mixture. Port wine 3 oz.
Broth 2 pints per diem.

27*th.*—Very much distressed last night; coughed violently and appeared to swallow the expectoration. This morning vomited about 5 oz. of fluid, chiefly pus mixed with greyish tenacious mucus. This had evidently been swallowed. Is now expectorating a little muco-purulent matter streaked with blood. Very much reduced.

Repeat mixture, wine and broth.

29*th.*—No more purulent matter discharged; expectoration tough mucus, very slightly tinged; fetor of breath diminished; very weak, cannot walk or stand alone; fever lower, but of a remittent character.

Repeat mixture and broth. Increase wine to 6 oz. if necessary.

30*th.*—A little better; fever decidedly declining; expectoration muco-purulent, a little increased in quantity. Pulse 124; bowels constipated; stools whitish.

℞. Hydrarg. c̄ Creta gr. ii.
Rhei Rad. Contrit. gr. v. Misce.
Fit. Pulv. To be taken directly.

1*st June.*—Powder acted sufficiently; is improving; pallor of countenance less; respiration nearly normal; cough diminished; fetor of breath disappearing; asks for curry and rice.

Repeat mixture; every four hours.

To have pish-pash, and diminish the quantity of wine to 3 oz.

4*th.*—Doing well; improving in strength and gradually losing the cough; auscultation impossible.

Repeat.

9th.—Up and playing with his toys; cough nearly gone; no more expectoration, but respiration still more rapid than natural and easily excited.

Repeat. To be allowed a simple curry.

13th.—Improved in every way; is able to walk about and take interest in his amusements; is weak, and inclined to be capricious about his food; dislikes the wine very much.

R. Potassæ Chloratis gr. xii.
Quinæ Disulphatis gr. ii. Misce.
Fiant Pulv. vi. Once, twice or thrice a day.

To take his ordinary diet and to reduce the quantity of wine to 1½ oz.

18th.—Convalescent. No cough; breath sweet; pulse and secretions natural.

Continue powders.
To be carried to the beach every evening.

24th.—Quite well.

Remarks.—I have thought the above case worthy of record as an instance of recovery from an affection rare in so young a child, and, unfortunately, not always so amenable to treatment. At first I scarcely suspected the existence of the graver disorder, considering the symptoms might be referable to the presence of ascarides in the intestinal canal, as I was aware that the child had previously suffered from these parasites. It was not until the 19th May that my attention was decidedly attracted to the condition of the lung by the increase of cough and the continuance of fever and rapid respiration. Even then the diagnosis was by no means decided, but the continuing fetor of the breath, aided by such physical signs as the difficultly performed auscultation detected, led me to suspect the death of a portion of the lung, and I gave a cautious prognosis. In a day or two, however, the evidence of pulmonary abscess was so complete, that I had no hesitation in telling the parents my view of the facts of the case.

Concerning the treatment, I may simply observe, generally that I am no advocate for the antiphlogistic regimen in young children, and that my views as to the safest way of conducting patients through acute affections have been, to a certain extent, influenced by the practice of the late Dr. Todd. I do not mean that I would blindly follow a stimulating plan of treatment, no matter what contra-indicating circumstances might arise, but I firmly believe that the

cases in which it is *necessary to give* stimulants are far more numerous than those in which it is *desirable to with-hold* them. Those who have practised largely amongst young children will readily bear witness to the advantage which may be derived from free stimulation, not only in exhausting affections, but also in acute diseases. It is almost astonishing how much brandy and wine will be well borne by infants of only a few weeks old.

Chlorate of Potash is a remedy I use to some extent, in common with many other practitioners, in all affections of mucous membrane attended by discharges, more or less profuse, of either mucus or pus. I did not prescribe it in this instance on account of the fetor of the breath, but it is worthy of notice that this drug, used both internally and as a wash, is very efficacious in removing fetor dependant upon affections of the teeth and gums.

No. 6.

A CONSPECTUS OF MEDICAL AND SURGICAL PRACTICE IN INDIA.

[UNDER this head we purpose recording abstracts of cases of an interesting character, but which do not require to be detailed at any great length. An opportunity will be thus presented, to all the profession throughout India, of placing before the readers of this Journal brief accounts of such cases as, from their importance, seem worthy of record.

We trust that we shall be favoured with a valuable mass of information to be published under this heading—and we will ourselves gladly arrange the materials sent to us, so as to contrast different modes of treatment of the same accident, or disease, or to throw light upon various disputed points in practice, which can only be decided upon the results of observations recorded by various Physicians and Surgeons scattered throughout this country.

We would direct attention to the fact that if this portion of the Journal be well supported, it will in time help to form a most valuable record for reference as to Tropical Diseases; and many cases which we should be obliged to decline, as unsuitable for *separate* publication, might here find admission as tending to supply some one point which others failed to demonstrate sufficiently clearly.

It is scarcely necessary to remark that in no country in the world is a wider field for observation open to the Profession than in India. Of the Physicians and Surgeons in the Military and Civil employment of Government almost every one, with a few exceptions, has the whole, or a portion, of an hospital under his care. Circumstances place even very junior professional men in most responsible charges, where their skill has ample field for exercise and where disease in every form is witnessed : operations of every possible description are now performed even at the most remote stations and must surely afford ample material for reports of much practical value.

We trust that, not from our own Presidency alone, but, from all parts of India, we shall receive contributions to this portion of our Journal, and we shall be happy to increase the size of it if this be required to meet increased demands upon our space.

We would, before detailing the plan we purpose to adopt in the management of *this* especial branch of this Periodical, desire to add a few words to those who are not enrolled upon the list of Practitioners given in our Medical Directory. We will be glad to receive contributions from *any* member of the Profession whether Physician, Surgeon or Subordinate, and whether in Government employment or in independent practice.

Again, we would extend the same observation to Professional men in other Presidencies. We shall receive their communications with equal pleasure, and insert them with equal care, as if they had been contributed by our more intimate friends belonging to this Army or in practice in the Presidency of Madras.

It is our wish to render this Journal a faithful exponent of professional experience in India generally, and not a mere local publication—and we gladly observe that contributions to this Journal are brought to the notice of the Profession in England, Scotland, Ireland and America. We have little doubt, therefore, that any new department which would increase the amount of original matter, especially that part of it which treats of Tropical Diseases, would advance us in our attempt to found a Journal whose existence may be more prolonged than that of most of our predecessors has hitherto been.

We shall continue to publish separate cases, if of importance, with fuller details of treatment, as we now do.

We would direct attention to the following

Rules regarding cases for the Conspectus.

I. We would suggest, to intending Contributors that, in addition to the ordinary rules regarding *MS.*, it would be desirable that the name of the station, or district, in which cases occur, or are treated, should be first stated: next, should appear the name of disease or accident—with the result: next, the name of the Medical officer by whom treated; with, if necessary, the name of the Reporter (who is requested to get the countersignature of the Medical officer as a guarantee of his approval of the Reporter's accuracy.)

II. All cases should be written, independently, on separate papers, so as to allow of rearrangement for publication, where it may be necessary to group together cases treated by different practitioners.

III. Prescriptions should be spoken of merely by the names of the medicines administered, unless these be given in any unusual manner or extreme amount.

IV. The nature of the disease, symptoms, treatment, operations, &c., should be as concisely stated as possible—and the comments on the case should be *brief* and *practical*.

V. *As a rule*, cases should not be reported until discharged from treatment, so that the result may be tolerably certain.

VI. Illustrations should be avoided as far as possible.

VII. The cases contained in the Mirror of Practice in the LANCET may be well consulted as affording good models for such brief reports.]

IN HOSPITALS AT DOWLAISHWERAM.

Under the care of MR. LOWE.

CASE I.—ANEURISM OF THE TEMPORAL ARTERY; DIRECT COMPRESSION OVER ANEURISMAL TUMOUR; CURE.

This is a case of aneurism of the temporal artery in a Corporal Æt. 28, cured in four days by direct compression of the tumour. The tumour was situated over the frontal ridge about three inches above the angle of the eye; it had been observed by the patient for a few days only prior to admission. It was about the size of a sparrow's egg, and pulsated strongly. The pulsation was arrested in the tumour by pressure upon the artery in the temporal region;

the integument over the aneurismal tumour was becoming discoloured; the tumour was very painful. The general health of the patient had been bad, having suffered from severe jungle-fever contracted in the Upper Godavery district. He was ordered to make firm pressure upon the artery in the temple with his thumb, for a couple of hours at a time, while resting the elbow upon a table. He continued this for six hours, at intervals, but it caused such intolerable pain that he was obliged to discontinue the pressure.

Although the pulsation was arrested in the tumour for some hours, afterwards it returned as forcibly as before. On 3rd December a cork compress was placed upon the tumour, and firmly bandaged; on the 4th, when examined, all pulsation had ceased, and the tumour was hard. The bandage alone was applied this day. On 8th December the hardened tumour had almost disappeared. The man is now well.

CASE II.—GUN-SHOT WOUND OF LEFT HAND; TETANUS; SEVERE PHLEGMONOUS ERYSIPELAS OF FORE-ARM; CONVALESCENCE.

This case has several points of interest. Corporal M——, Æt. 27, sustained a severe gun-shot wound in the left hand by the bursting of his rifle on the 22nd November, while on Command at Rudrumcottah, 70 miles up the river Godavery. The thumb, first, and middle fingers were blown away; the wrist joint was opened, and the shattered metacarpal bone of the middle finger was lying exposed amongst a fetid mass of torn muscles, tendons, and nerves. He was conveyed to Head Quarters in an open boat, being two days and nights upon the river in dense miasm. He had consumed during this time much brandy, and had eaten nothing; bowels long constipated; on the 24th Mr. Lowe amputated the shattered bone, and ragged flesh, by a clean sweep along the radial side of the ring finger down to the wrist joint, hoping to save the ring and little fingers. No integument was left for a flap; the wound was therefore dressed to granulate up and cicatrize over.

On the 25th severe tetanus set in. His bowels had not been open since he had been in hospital. His spine was cupped, and leeched; a blister was then applied, and a second to the throat to relieve the intense thirst, heat, and hawking he complained of; the difficulty of respiration, spasm of the diaphragm, and other muscles, were relieved by sinapisms; he took calomel and jalap by the mouth, and had three purgative turpentine enemata. Copious fetid stools followed, and after the blisters had risen, and the bowels had been well acted upon, all symptoms of tetanic action disappeared never to return. His bowels were kept freely open. On the 27th severe phlegmonous erysipelas set in; the wound in the hand was looking healthy, and suppurating freely. Leeches were applied to the inflamed arm, and the arm was enveloped in a hot charcoal poultice.

He now took Muriated Tincture of Iron, Quinine, and Nitric Acid, wine, and nourishing diet at frequent intervals.

The arm was very painful, greatly swollen, and boggy for several days; the suppuration from the wound was excessive. A full dose of laudanum was given every night at bed time.

On the 9th December the erysipelatous inflammation was gone; the suppuration from the wound became less; abundant granulations formed, and cicatrization had commenced; there was much hardness left in the arm. A weak zinc lotion was applied to the wound, and the arm bandaged. At this date the man is in excellent health; the wound is healing fast; he takes daily exercise with his arm in a sling.

This man will, of necessity, be unfit for further service, but he will have, we trust, a very useful remnant of his hand left to him.

CASE III.—FORE-ARM TORN OFF BY AN ANCHOR CHAIN BELOW ELBOW-JOINT; FLAP AMPUTATION AT LOWER THIRD OF HUMERUS; CURE.

A cooly upon a steam-boat in the river Godavery was assisting in throwing out an anchor, his left arm was caught between the chain and the boat, and was rudely amputated by *ecraseur* about an inch and a half below the elbow joint—on the 29th Novr.—when he was admitted into the Civil Hospital two days after the accident, Mr. Lowe found the wound enveloped in rag, there had been little or no bleeding, and the ragged stump, with *both bones protruding and splintered upwards*, was looking as clean and healthy as could be expected.

Mr. Lowe removed this portion of the arm by the flap operation above the elbow-joint, while the patient was under the influence of chloroform. Three arteries were ligatured, *and the ligatures were cut off close to the knots;* the wound was exposed for some time, then brought together by sutures, and a strap or two of plaster, and cold wet lint was applied.

Adhesion took place by the first intention; the man has had no bad symptom; and at this date is well.

This case, which happened a week after the former one, contrasts strongly with it. It was certainly a more formidable wound in every sense; the shock to the system must have been very severe. In the two cases we have the *antiphlogistic* temperament and habit of body of the native, and phlogistic condition of the European, (in Corporal M———'s case,) prominently demonstrated.

In one case life is perilled by tetanus, and severe erysipelatous inflammation; in the other uninterrupted recovery takes place. In one we have to exhibit stimuli and tonics to a considerable extent to keep up the flagging powers of life; in the other nothing more than an occasional dose of castor oil is required.

CASE IV.—IDIOPATHIC PHLEGMONOUS INFLAMMATION OF THE SCROTUM; LONG INCISIONS; CURE.

Corporal C——, Æt. 25, was admitted on 8th April with considerable œdema and hypertrophy of the scrotum of two days' standing. It was preceded for three days by intolerable itching and heat, which caused him to scratch the parts continually. The perineum was inflamed, but he felt a sense of stinging along the urethra near the anus. He had experienced some difficulty in passing his water before the itching came on; made water easily on admission. Purgatives and cold lotion to the scrotum were ordered; but the swelling continued to increase, the pain was excessive, and the scrotum boggy to the touch. Free incisions into the scrotum gave exit to a considerable quantity of very offensive pus, after which the patient became easy. A large poultice was applied. A second abscess formed, and was again evacuated by a free incision, and the patient convalesced and returned to duty.

This case closely simulated rupture of the urethra, and extravasation of urine; but the patient had no stricture, and the perineum was unaffected. It is only possible to account for the excessive inflammation and suppuration by the presence of one or two pustules of *itch*, which he had at the time; and by the fact of his possessing a constitution of the most irritable, and nervous character.

CASE V.—LACERATION AND CONTUSION OF GREAT TOE, FRACTURE OF THE BONE; AMPUTATION; CURE.

The bellows boy of the "A" Company Sappers and Miners sustained this accident by the corner of the cash-chest being dropped upon the toe. The distal phalanx was crushed, and the soft parts above were much torn. He had received no assistance for several days and the inflammation and pain were very great.

It being expedient to save as much as possible of the great toe in order to preserve the entire breadth of the foot—more especially in natives of India,—Mr. Lowe passed a bistoury through the front of the joint, and cut a long flap from the lower surface by one sweep of the knife. This flap was brought well over the proximal phalanx and united to the integument by two sutures, adhesion by the first intention ensued; the resulting cicatrix was well out of the line of direct pressure, and the boy was left a tolerably useful toe. When he was discharged from hospital there was no limping observed, and in due time, no doubt, he will be enabled to wear the ordinary sandal.

No. 7.—*A Case of Aperture in Throat, of four years' standing, treated by Harelip Suture and resulting in perfect occlusion.* Reported by W. KARNEY, Assistant Apothecary.

SUNNASSEE, Æt. 30, weaver by trade, village Rajahmundry, applied at hospital 28th October 1862, for surgical aid on account of having a small oval aperture in throat, which he states is the result of an attempted suicidal wound, perpetrated in a furious fit of intoxication, about four years ago.

The cut was closed at the time by sutures, but primary union occurred at the extremities only, while the middle portion remained un-united, and found ultimately a permanent button-hole shaped aperture, the margins of which cicatrised over and thickened. This opening is longer vertically, and the neighbouring skin is puckered and adherent; through it the interior of larynx is distinctly seen, and air and mucus escape from it when he speaks. In speech, most of the vocal sound is lost through this vent, but on closing it with the finger, the utterance becomes tolerably clear and intelligible.

About a month ago an attempt to re-unite the edges by sutures was tried at the Civil Dispensary Rajahmundry, without success. The man is anxious to be operated on, so that his speech might be rendered more intelligible.

Operation.—Mr. Lowe first carefully pared the margins of the aperture with a scalpel, and then inserted two fine ordinary sewing needles through the edges, and brought them into accurate contact with the figure of 8 suture, (after the manner of harelip) and smeared the surface with a thick layer of collodion.

After the operation, the man was sent home, and told to keep himself perfectly quiet. When he presented himself on the 4th day, the needles were found detached, and a piece of raw flesh was adhering to the part, which the man had put there himself under the idea that it would expedite the healing. The aperture itself was perfectly closed, though the line of cicatrization is still rather tender superficially.

Remarks.—This case is illustrative of the inefficacy of the plan of employing interrupted sutures in cases where primary adhesion is sought for, in wounds situated in parts of the body, liable to extensive motion.

Extensive transverse throat-cuts, when brought together

by interruped sutures, are, of all incised wounds, the most liable to eventuate in defective union; and this result is obviously attributable to the excessive disturbance, to which the edges of a wound in such a situation as the neck, are liable. Not only does every movement of the head affect the wound, but in every act of deglutition the subjacent larynx is raised and depressed considerably, and must draw asunder to some extent the opposed edges, and so disturb the reparative process. Then, air escaping through the wound, either gently or with violence, as it constantly does in breathing, speaking, or coughing, tends in no slight degree to retard union; and besides from the natural superabundance of the integument in this region, the lips of a wound in this situation are disposed to invert; hence if the patient moves his head too much, talks, or swallows, oftener than he should, it becomes next to impossible to maintain the lips throughout their whole extent in accurate contact by interrupted sutures, and the consequence is that only partial union at the extremities of the cut takes place, while the central part which is liable to be most disturbed, is left patent. The margins of this opening cicatrize over, thicken, and a permanent vent is the result.

If the lips of an extensive throat cut are immediately and carefully brought together, and rendered air-tight for the first 48 hours, while the causes which tend to displace accurate apposition are effectually controlled, there is no reason why such a wound should not close by the first intention, as incised wounds do, in other parts of the body. The interrupted suture alone does not secure all these conditions, and for this reason it is that it fails to produce perfect occlusion in many cases of throat-cuts.

A more effectual method than interrupted sutures for maintaining the lips of an extensive throat-cut in accurate contact, is the one of raising the two edges and running a continuous stitch along in the manner a tailor would sew two seams together. This sort of suture is more likely to keep the edges in air-tight apposition under the excessive disturbance to which they are subject, and so allow a fairer chance for adhesion by the first intention being fully established. The protuberant cicatrix which is apt to follow, can easily be reduced afterwards by lunar caustic. This kind of suture has often been recommended, but I am not

aware that it is adopted much in practice, nor am I acquainted with any objections to its use.

When throat-cuts are not extensive and their direction admits of needles being inserted, their employment in preference to interrupted sutures is warranted by the successful issue of this, and many other similar cases. Metallic sutures, it is known, produce far less irritation along their track, than either silk or cotton ligature, and, as the whole extent of the lips of the wound is covered by the ligature passing from needle to needle, the lips are rendered air-tight, and any motion of the parts is not likely to disturb them, which is not the case with the interrupted suture. For the same reasons preference is given to metallic sutures in all incised wounds about the face or cheek, especially when they communicate with the oral cavity.

The interrupted suture, however, answers very well in cases where the wound is not very extensive, and the patient sensible enough to keep himself perfectly quiet during the first 48 hours, and where the intervals between the sutures are rendered air-tight by applying layers of collodion or strips of adhesive plaster, but otherwise, it fails more frequently than it succeeds.

The operation performed in this case though apparently very trivial, may be attended with extreme peril. While paring the margins of an aperture in such a situation blood may pass in quantity into the larynx and produce suffocation. Fluid from a wet sponge may also produce this effect. Great care should therefore be used. A soft dry sponge should be constantly applied to soak up the blood as fast as it escapes. Blood passing in small quantity, even into the air-passages, is dangerous, as the clot which is formed will by and bye act as a foreign body and set up irritation and chronic suffering which may sooner or later end fatally.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of October*, 1862.

1862.	Barometer corrected and reduced to 32° Fahr.	Standard Thermometer. Observed Extremes. Max.	Min.	Daily Means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mils.	Ins.	
1st	29·787	92·0	77·7	82·3	76·0	S. E.	88	.....	Light clouds.
2nd	·773	90·9	77·3	84·0	78·2	S. S. E.	104	.....	Fine.
3rd	·795	92·4	78·4	84·4	78·0	S. S. E.	139	.....	Chiefly fine.
4th	·800	91·7	77·2	82·7	78·7	N. W.	90	.....	Dull and cloudy.
5th	·787	97·3	73·9	78·0	76·0	S. W.	89	1·234	Overcast. Rain from 3 to 9 A. M.
6th	·755	91·7	76·3	82·5	78·4	S.	95	.....	Light clouds.
7th	·787	92·3	76·9	82·8	78·4	S. S. E.	85	.....	Fine.
8th	·776	91·1	76·4	82·0	78·3	W. S. W.	80	.....	Fine day. Cloudy night.
9th	·743	88·7	78·9	81·8	78·4	N. N. W.	71	0·011	Overcast.
10th	·717	86·6	77·7	79·9	76·5	N. W.	66	·190	Cloudy. Rain before 10 A. M.
11th	·716	87·3	75·2	81·1	76·9	N. E.	70	.....	Light clouds.
12th	·778	88·9	76·5	82·1	77·6	E. S. E.	71	.....	Nearly fine.
13th	·827	88·5	78·5	82·9	77·0	E. S. E.	91	.....	Fine with passing clouds.
14th	·844	88·9	77·7	82·5	77·3	E. S. E.	69	.....	Fine but hazy.
15th	·831	89·8	77·1	83·8	77·9	E. S. E.	73	.....	Hazy.
16th	·845	90·4	77·5	83·0	77·7	S. E.	75	.....	Light hazy clouds.
17th	·852	89·1	77·7	82·2	77·4	E. S. E.	64	.....	Cloudy.
18th	·832	88·8	77·2	81·6	76·9	S. E.	58	.....	Nearly overcast.
19th	·800	90·9	75·2	80·6	76·6	E. S. E.	79	1·00	Overcast. Shower at 3 A. M.
20th	·772	89·8	76·2	81·2	75·6	N.	69	.....	Dull and heavy.
21st	·753	92·5	76·6	83·8	77·6	S. S. W.	169	.....	Heavy passing clouds.
22nd	.765	94·6	77·7	83·4	77·0	S. S. W.	218	.....	Cloudy.
23rd	·783	94·9	78·3	85·5	77·8	S. S. W.	173	.....	Dull day. Fine night.
24th	·802	93·9	77·7	85·3	76·7	W. N. W.	120	.....	Hazy clouds.
25th	·823	91·7	78·5	84·1	76·6	W.	81	.....	Nearly overcast. [20*m.* P. M.
26th	·867	89·9	78·1	80·5	77·5	N. E.	56	1·661	Overcast. Rain from noon till 1*h.*
27th	·861	87·4	76·7	81·0	76·9	WSW & ENE	77	0·165	Flying clouds. Rain about noon.
28th	·839	87·7	75·7	81·2	74·9	N. E.	98	.....	Nearly fine.
29th	·894	87·5	74·9	81·0	74·3	N.	177	·367	Hazy. Rain after 10 P. M.
30th	·850	79·1	72·5	75·4	73·3	N.	208	1·349	Overcast. Steady rain from midnight until 1 P. M. Shower at 5¼ P. M.
31st	·830	78·9	71·9	72·6	72·5	N. & S. W.	140	3·220	Heavy rain from 0¾ to 9¼ A. M. and from 1¾ to 3¼ P. M.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of November,* 1862.

1862.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxm.	Minim.	Daily means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·910	84·5	69·7	78·0	76·4	E. N. E.	77	·084	Fine with passing clouds.
2nd	·944	84·2	73·7	78·4	75·3	N. E.	70	1·292	Rain from 1½ to 8 A. M. & at 1 P.M.
3rd	·906	84·8	75·4	80·0	75·4	N.	125	·116	Fine with flying clouds. Shower at [3 A.M.
4th	·898	85·5	75·3	80·3	75·6	N. N. E.	123	.....	Nearly fine.
5th	·911	84·9	74·2	79·3	75·3	N. N. E.	116	.....	Flying clouds.
6th	·901	84·7	74·7	79·4	74·8	N. N. E.	142	·006	Do.
7th	·883	84·7	73·9	79·8	73·5	N. E.	173	.....	Light clouds.
8th	·895	83·7	75·0	78·8	70·8	N. E.	153	.....	Light haze.
9th	·889	83·1	72·1	77·7	69·5	N. N. E.	119	.....	Chiefly fine.
10th	·890	82·0	68·7	75·8	68·6	N. E.	109	.....	Fine.
11th	·895	82·9	68·9	76·9	70·5	N.	119	.....	Nearly fine.
12th	·913	83·5	71·9	77·6	73·0	N.	137	·080	Passing clouds. Shower at 5½ A. M.
13th	·910	85·4	72·7	79·0	75·0	N. E.	135	·020	Chiefly fine.
14th	·888	84·0	75·9	79·9	73·8	N. E.	188	.....	Passing clouds.
15th	·920	82·7	76·7	78·8	71·7	N. N. E.	198	.....	Do. do.
16th	·924	83·5	71·7	78·0	71·7	N.	131	.....	Light clouds.
17th	·902	81·8	74·3	77·0	73·0	N. N. E.	162	·066	Overcast. Shower at 3 A. M.
18th	·883	82·6	73·7	78·0	73·2	N. N. E.	170	·133	Overcast. Frequent showers.
19th	·961	79·0	73·9	75·4	73·4	N. N. E.	105	·122	Rain from 6 A. M. to 2½ P. M., also
20th	·996	81·1	73·7	76·4	72·4	N. N. W.	136	·095	Light showers. [after 11 P. M.
21st	·912	81·4	72·9	74·5	72·4	N. N. W.	156	·109	Do. especially about 7 P. M.
22nd	·854	84·8	72·2	76·8	75·5	N. E.	136	·116	Shower at 4½ A. M.
23rd	·867	82·0	73·7	76·2	74·6	N. N. E.	95	·140	Rain from 1 to 2½ A. M.
24th	·902	79·1	73·9	75·7	74·0	N. N. E.	88	2·134	Rain from 5½ A. M. to noon.
25th	·943	82·6	73·5	76·5	72·2	N. N. E.	130	·022	Passing clouds.
26th	·945	81·3	70·7	77·1	71·9	N. N. E.	120	.....	Hazy clouds.
27th	·929	82·5	72·7	77·7	73·5	N. N. E.	134	.....	Chiefly overcast.
28th	·932	83·6	73·1	77·2	73·2	N. N. E.	140	.....	Passing clouds.
29th	·953	82·6	73·2	77·2	73·5	N. N. E.	139	.....	Do. do.
30th	·941	83·9	73·7	78·0	73·8	N. N. E.	124	.....	Hazy.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P. M., and 10 P. M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

Meteorological Results *from the Madras Observatory Register, for the month of December,* 1862.

1862.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxm.	Minm.	Daily Means. Dry.	Wet.	Wind. Prevailing Direction.	Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·974	82·4	72·6	76·6	72·2	N. N. E.	101	.....	Fine with passing clouds.
2nd	·991	82·9	71·9	78·5	72·6	N. N. E.	127	.....	do. do.
3rd	·992	81·8	74·5	78·3	69·5	N. E.	232	.....	Hazy clouds. Lunar halo.
4th	·985	81·9	72·7	77·5	71·4	N. N. E.	214	.....	Hazy clouds. Tinted lunar halo at 10 P.M.
5th	·957	82·4	71·0	76·1	70·8	N.	180	.....	Passing clouds. Lunar halo.
6th	·933	80·4	71·2	75·6	70·9	N.	172	.....	Heavy and dull.
7th	·936	80·9	69·9	76·4	70·3	N.	202	.....	Flying clouds.
8th	·959	81·8	71·5	75·8	69·9	N. N. E.	184	.....	Light hazy clouds.
9th	·909	81·4	67·7	74·5	69·6	N.	137	.....	Passing clouds.
10th	·893	80·1	67·8	75·7	72·5	N.	154	.....	Hazy.
11th	·916	80·8	69·7	75·5	73·7	N.	186	.....	Heavy clouds.
12th	·879	81·2	71·7	76·1	74·5	N.	218	0·040	Overcast. Rain towards midnight.
13th	·850	83·1	72·5	71·3	71·1	N. N. W.	153	1·358	Rain. Chiefly before noon.
14th	·836	80·1	71·9	74·1	72·2	N.	185	3·283	Heavy rain.
15th	·854	79·8	71·8	75·8	70·7	N.	190	0·010	Overcast.
16th	·845	79·7	73·7	75·8	72·0	N.	237	.....	Do.
17th	·824	74·8	69·2	71·9	70·3	N. N. W.	241	.285	Do. Rain at 7½ A.M. and 3½ P.M.
18th	·783	74·1	70·5	71·7	69·8	N. N. W.	222	·628	Do. Rain chiefly before noon.
19th	·778	72·3	67·2	69·3	64·1	N. N. W.	229	·031	Do. Shower at 2½ P.M.
20th	·791	74·5	68·2	71·6	66·4	N. N. W.	244	.....	Do.
21st	·798	77·4	70·6	73·0	71·3	N.	271	·089	Do. Showery.
22nd	·785	79·2	71·7	73·7	70·9	N.	247	·024	Chiefly overcast. Shower at 11¾ P.M.
23rd	·810	76·6	71·6	74·0	71·8	N.	187	·184	Overcast. Showery.
24th	·848	77·2	72·8	73·6	72·1	N.	208	·172	Do. Rain at 10 A.M.
25th	·879	78·4	72·5	76·6	74·6	N. N. E.	188	.....	Do.
26th	·922	78·9	72·5	73·4	72·5	N.	150	·387	Do. Rain from 1½ to 8½ A.M.
27th	·964	73·7	71·5	72·4	70·8	N.	179	·492	Do. Rain between 3½ & 11 A.M.
28th	·997	79·6	71·8	74·3	71·8	N.	158	·022	Clouds breaking. Fine night.
29th	30·013	78·3	68·3	72·7	68·9	N. N. E.	169	.....	Light passing clouds.
30th	·055	77·5	65·4	70·5	67·4	N.	120	.....	Chiefly fine.
31st	·050	77·8	62·6	69·8	66·6	N. N. E.	75	.....	Fine.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 5 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

PART IV.

MEDICAL INTELLIGENCE.

EXTRACTS FROM THE PUNJAB SANATORY REPORT, 1862.

[We are indebted to the courtesy of Major Lawder, Deputy Quarter Master General of the Madras Army, for the opportunity of perusing in its entirety the admirable report of Dr. Hathaway upon the Conservancy arrangements in the Military Stations in the Punjaub. Major General McCleverty having kindly placed at our disposal an *Abstract* of this Report, we perused it with much pleasure, and we now reproduce the Report more fully, omitting only the detailed remarks (as to individual stations in the Punjaub) which are foreign to our present purpose—viz., to direct attention to those *general considerations* regarding Sanatory matters which are so well discussed by Dr. Hathaway. We have, of necessity, been obliged to omit the illustrations which are, we believe, about to be republished by the Madras Government.—Ed. *M. Q. J.*]

From C. Hathaway, Esq., M.D., *Inspector General of Prisons* (Punjab), *Special Sanatory Commissioner;* to R. H. Davies, Esq., *Secretary to the Punjab Government.*

1.—In accordance with the instructions contained in your letter, No. 1,576, of the 11th of October 1861, intimating that, under the authority of the Government of India, I was appointed Special Sanatory Commissioner, to inspect and report upon the conservancy arrangements in the principal Military Stations in the Punjab, I have the honor to submit the result of my observations and enquiries, for the information of His Honor the Lieutenant-Governor.

Plan of Report.

2.—Following the plan which I have adopted, for many years, in my periodical reports on the jails in this Province, it will be useful to make a few preliminary remarks on the main points to which the extent of my investigation appears to be limited, as, thereby, much useless repetition will be saved when speaking of each station separately.

Its practical nature.

3.—As my report is desired to be based on personal inspection, I have omitted all theoretical discussion as to the cause of disease, and have confined myself to the practical consideration of the subject of conservancy; first pointing out what are the great rules which nature and experience have laid down for our guidance, and then showing how

and where these rules are disregarded, with the remedial measures that suggest themselves for the abolition of existing evils.

System of conservancy pursued at the Punjab jails.

4.—Having been engaged in applying these principles for the last ten years, and the result being pronounced by the Punjab Government as eminently successful, I must be excused if I illustrate some of my remarks by what has been effected in the jails of this Province; my object being to show that the sanatory measures I advocate are founded not on theory but on personal experience, and that the same laws apply equally to any body of men, whatever may be their class or condition.

Opinions quoted.

5.—At the same time, I have not hesitated to quote the opinions of those who have been labouring in the same path with myself, or to adduce evidence furnished by my professional brethren in their Military Reports, where the same results have been gained in the Regiments they have charge of.

Connection between dirt and disease.

6.—The intimate connection between dirt and disease, which is proved by the most unmistakeable evidence to exist in all countries and climates, is perhaps still more apparent in India, where, under the continuous powerful influence of a tropical sun, with a long and protracted rainy season, followed by a very brief and mild period of cold weather that is not severe enough to receive the name of winter, the results of neglecting the Hygienic laws of nature, are daily witnessed in the numerous forms of disease which run their course with the most rapid and fatal effect.

The essentials of life and health.

7.—The three essentials to life are air, food, and water, and, as a universal rule, according to their purity or impurity, so will either health or disease exist.

Air.

8.—In no quarter of the globe, probably, is the essential value of pure air so patent as in this country, whether we consider the morbific influences resulting from malaria, the deadly exhalations from stagnant water and decomposing animal or vegetable refuse matter, or the poisoned state of an atmosphere that has been contaminated by the products of expiration from the human body.

Considered as a fluid.

9.—If air were more constantly considered as a fluid, capable of being fouled and dirtied in the same way as water is, we should be more inclined to pay attention to the natural sense of smell, which, like all our senses, has been wisely given us, not merely for our gratification and enjoyment, but as a valuable guide by which we are capable of detecting danger and avoiding it.

State of the atmosphere in a barrack during night.

10.—Has any one ever entered a barrack (in the middle of the night) in which fifty or a hundred soldiers were sleeping, without being sickened by the close and unwholesome effluvium that pervades the whole building? And yet there is no reason that it should be so; there is no reason why the atmosphere during the night should be permitted to become more loaded and offensive than in

the day. But, certain it is that free ventilation is most unmistakeably called for; not mere cubic or superficial space, but a greater ingress of fresh air, and a more rapid egress of that which has become impure and unwholesome.

One cause of disease among troops in India.

11.—And this is, I think, one main reason why the European Officer enjoys a greater degree of health than the Private, and rallies sooner when attacked with sickness; for if pure air be necessary to health when well, it becomes doubly so in a state of disease, when the secretions from the skin, and exhalations from the lungs, become not only injurious but highly poisonous.

Illustrated also in the Crimea.

12.—We know that in the Crimea, the mortality in the great hospital at Scutari was as much as 40 per cent., while in tents at the same time, with fewer comforts and advantages to the sick, it was less than half that rate.

Cholera appearing first in the Hospitals.

13.—It is a remarkable fact that, at more than one station in the Punjab where cholera appeared last year, the first case occurred in the hospital, and this alone would show the absolute necessity not only of removing the excreta at once, but of abolishing as much as possible the use of close-stools, and especially the custom of keeping them in the verandahs and corner rooms.

The air test and its value.

14.—A valuable little instrument was invented by Dr. Angus Smith, some years ago, by which the purity or foulness of air may be ascertained and recorded. One of these air-tests should be placed in every hospital and barrack, and a register kept of the daily observations. The result would be a most striking one, forcing conviction upon the most careless or prejudiced that the atmosphere, which appears in the day time to be pure and wholesome, becomes at night vitiated and unfit to be inspired.

Necessity of night inspections of Barracks.

15.—Inspecting Officers and Regimental Surgeons should, also be called upon to make occasional visits to the barracks before the men quit them of a morning, and a standing order should be given regarding the keeping the windows or ventilators open. In many barracks that I have visited, I find no regulation on this subject enforced. In most cases the means for opening them were not available, from the ropes being defective, and a single string, if required, has to form the subject of an official application to the barrack department. All kinds of excuses were offered; the possible access of heat, dust, and rain were readily brought forward, but no thought seemed to be taken of the positive danger incurred by breathing an atmosphere, which at night is poisoned with the effluvia and exhalations given off from the bodies and lungs of sleeping men.

Windows.

16.—The opening or shutting of a single window in a sleeping barrack, should not be left to the will of the soldiers, who are naturally ignorant of the conditions necessary to healthy respiration.

17.—Every barrack should be provided with chimneys or flues, and ridge ventilation in the roof, and the condition of the air at midnight should be tested, in forming an opinion as to the number of men who can sleep in it without detriment to health. This would be a safer criterion to adopt than any amount of cubical or superficial space.

Advantage of chimneys in barracks.

18.—In hospitals, thermantidotes on an improved plan, and of much larger size than those generally adopted, should be used during the extremely hot months, wherever the number of sick exceeds a certain average. At night time, the *khus-khus tattee* should be dispensed with, and the external air simply thrown in.

Thermantidotes for Hospitals.

19.—"Blowers" of this kind are in operation at the Agra Central Prison, and it is proposed to introduce them extensively into the other large jails of the N. W. Provinces. They have been found to be most efficacious in remedying the one great evil I have attempted to describe, (an evil that can be proved to exist by any one who will take the trouble to do so) and, I think, that they ought certainly to be introduced into every Military prison in India, in which European soldiers are confined.

In use at the Agra jail.

20.—I beg to give the following brief extract from Dr. Walker's last published Report; it is the result of three years' practical experience gained by studying the health of a large body of men, exceeding 2,000 in number, who are located in the Agra jail:

Dr. Walker's opinion quoted.

"Theoretically, the standard amount of space appears sufficient; practically, I believe, it is not so. If we could always supply a strong wind blowing through the barracks, well and good, but this is not the state of things in practice. Let us go into one of these barracks, in a still night in the hot weather or rains, and stoop down so as to be on a level with the stratum of air that lies dormant over the mass of bodies; we then become aware of the condition of the atmosphere breathed by the prisoners. Their perspiring bodies throw out exhalations, which are either absorbed into the bedding to be thence evaporated, or hang in a cloud over them to be received over and again into their lungs. There is no means of getting rid of this cloud of noxious vapours completely; increased height in the barracks will not affect it, for the exhalations, I complain of, gravitate downwards on the sleeping men, and ventilation, without a circulating current of air, will not accomplish what is wanted."

21.—The truth of this statement I can bear witness to myself from my own personal observations, having for many years, been accustomed to visit the sleeping wards of the Lahore jail at all hours of the night.

Personal experience at Lahore.

22.—But we cannot have pure air in our barracks and hospitals if a foul atmosphere prevails without, caused (as it constantly is) by badly constructed or ill-kept latrines and urinaries, cess-pools, or open reservoirs of fetid water from the wash-houses and kitchens, and neglected drains. With proper management, no effluvium should be perceptible from any of these places, and if it does exist, the converse

Latrines and urinaries.

inference is equally certain, viz., that there is want of proper supervision, or, in other words, neglect.

Regiments in which they are well managed by the Medical Officers.

23.—What can be effected in one Regiment can be equally effected in all, and the superior conservancy (as indicated by absence of all smell) which prevails in the lines of the 21st Hussars at Peshawur, the 101st Regiment at Mooltan, and the Artillery at Jubbulpore, and which have been personally attested by the highest Military authorities, proves that it is not so much the building as the management of it, which is to blame.

Defects in construction.

24.—At the same time, I am willing to admit that all regimental latrines have several defects. They have been constructed at a most unnecessary expenditure of money, on too large a scale, so that they keep off air from the barracks, require a large establishment for cleaning, and they are so deficient in ventilation, that, for want of an ample current of air permeating in every direction, they become permanent and intolerable nuisances.

Advantages of the system in the Punjab jails.

25.—The latrines used in the Punjab jails are perfectly free from any effluvium whatever, and the essential points in which they differ from the majority of those constructed for Military use are as follows :—

A. The absence of all masonry or pucca work containing lime cement.

B. The prohibition of all cess-pools or reservoirs, and all drains or pipes, whether closed or open, leading in or out of the latrine or urinary.

C. The prohibition of water being used to flush the ground or flooring, which is to be kept perfectly dry.

D. The flooring being of earth, (instead pucca masonary or stone) on which dry sand to the depth of 4 inches over a layer of well rammed clay is strewed, and the portable vessels for the reception of both fluid and solid refuse matter being deposited on the sand.

E. The immediate removal of all refuse matter from the latrine itself, and the careful burial every evening in trenches dug for the purpose.

F. The abolition of the practice of sprinkling powdered lime in the urinaries and latrines, or in any other spot.

Essential differences in the barrack system.

26.—That these several differences are very essential ones, and that much advantage, both in a sanatory and financial point of view, would be gained by the practice which obtains in the Punjab jails being extended to the barracks in which European troops are located, I will attempt to show *seriatim*.

Action of urine upon lime and concrete.

27.—It is a well known fact that the acid contained in urine (known by the name of uric acid) has a strong tendency to combine with lime in any shape, and the new compound formed thereby is highly offensive from its strong ammoniacal odour. It is this which produces the overpowering fetor in all urinaries where limestone, or pucca cement containing lime, is used, and there is no remedy but to break up and remove the entire brick-work with its coating of concrete, a troublesome and expensive process, especially as it has to be done constantly. The destructive effect produced by urine on lime

cement, cannot fail to be apparent to any one who takes the trouble to examine one of the urinaries attached to a European barrack, and the effluvium is perceptible to a painful degree even before entering the building. Stone slabs are only one degree less objectionable than pucca masonry, as they are mainly composed of lime-stone joined together with lime cement.

The evil of drains.

28.—For the same reason, all drains or conduits, however small should be prohibited. They soon become saturated and tainted with the ammoniacal odour, which no washing or flushing with water can remove; they are, also, constantly made use of improperly, and every modification and plan of copper and zinc tubing, stone drains, and leaden piping, has been tried, but all have been condemned from the urine infiltrating and finding its way beneath, where it remains giving rise to a constant and irremediable stench, which is communicated to the clothes of those who enter the building.

Superiority of the dry system.

29.—The superiority of the dry over the wet system, or, in other words, the total abolition of the use of water for flushing the urinaries, requires but ocular demonstration to convince the most sceptical or prejudiced. In theory, the idea of a steam of water constantly flowing through the urinaries appears perfect; in practice, it is known to be a total failure, because the urine is passed above and below, and on the sides, while the water itself merely trickles along a small portion of the conduit; added to this, the water after flowing through the urinary becomes itself polluted, and has to be got rid of. It cannot be used to lay the dust or water the road, and hence expensive cess-pools are dug to receive it, where it remains stagnating and offensive, or it occasionally bursts through the surface of the ground, in close proximity to the sleeping barracks, and even the wells which supply the troops with drinking water. This has happened at Meean Meer more than once, as well as at Sealkote.

Objections to joining the lavatory with the urinary.

30.—By placing the urinaries under the same roof as the lavatories, the former are brought too close to the barracks, and the damp and wet from the water used in washing destroys the perfect working of the system, which is essentially opposed to all moisture and wet.

Uselessness of lime as applied.

31.—The sprinkling of powdered quick-lime is proved to aggravate the evil, by causing the evolution of fetid ammoniacal gas on its meeting and combining with urine. Quick-lime, it is true, destroys animal matter, when buried with it beneath the surface of the ground, but no such decomposition is effected when it is exposed to the open air; and as a deodorizer, especially when applied to urine, it only increases the effluvium it is intended to destroy.

The evil produced.

32.—But further, it is positively injurious, as it serves to conceal filth that ought to be removed. In the course of my late tour of inspection, I have frequently detected the sweepers in the act of covering over with lime the filth they had neglected to take away.

33.—Moreover, putting out of the question the cost, which at some stations amounts to 800 or 1,000 Rupees per annum, it is never used in our own houses, where it certainly would be if of any real practical benefit.

The expense.

34.—The only remedy for these evils, and they exist to a greater or less degree at every station in India, is to break up and remove all the old flooring, plaster, and masonry work which has become in any way offensive, to destroy and fill up all cess-pools and drains, and to increase largely the ventilation by turning small arched openings at the base of the rear wall for the removal of the pans, and making apertures of ample size below the roof, on all four sides of the building, so as to establish a thorough lateral current.

Remedial measures.

35.—The seats of the latrine should be in every case of wood, with circular apertures, and the pans should be either of iron, according to the standard pattern approved of by the Government of India in September 1858, or of earthenware which is less costly, and much more easily kept clean.

The best plan of internal fittings to latrines.

36.—A large iron receptacle with close fitting lid should be kept in the rear of each latrine, and removed morning and evening; but a sweeper must attend at the spot throughout the day, to empty the pans as they are used into these receptacles, and to keep the seats, floor, and vessels scrupulously clean.

External receptacles for filth.

37.—The urinals should, also, be the upright iron pattern sanctioned at the same date; they should be placed on sand, in a common circular earthen dish containing charcoal, to prevent the floor being accidentally soiled, and care must be taken that they are never permitted to overflow.

Urinals.

38.—The urinaries ought to be small detached buildings, partly open on all sides, and as close to the barracks as practicable, both for the convenience of the men, and to prevent other places, such as the lavatories, being improperly made use of, as they are at present.

Plan of urinaries.

39.—Instead of lime, wood ashes from the cook house, and the refuse dust of charcoal too small to be used for any other purpose, are found to be of real efficacy; and a heap of this, ready mixed, might be always kept at hand to sprinkle in the pans used in the latrines, as well as in the large iron receptacles kept outside, in which the filth is deposited until the conservancy cart arrives to carry it away to the trenches.

Substitute for lime.

40.—Lastly, the surplus water from the lavatories and baths, instead of being allowed to pass into deep cess-pools, should go to the soldiers' gardens; or, if these do not exist, it should be collected in open circular tanks, and be emptied by hand every night and morning, being then used to water the roads or sprinkled on the ground round the barracks, by which means dust and dirt are lessened, and the tendency to ophthalmia prevented.

Water from lavatories.

41.—Such have been the effects, combined with the lessening of disease and the reduction of expense, that have resulted from the system in the Punjab jails; a system which has been abundantly tested during the last ten years, and to the efficacy of which the Government of this province has repeatedly borne witness.

Results of the system.

42.—On the occasion of His Excellency the Commander-in-Chief visiting Lahore in December last, he inspected the Central Jail which contains 2,200 prisoners, and after minutely examining the details of the system, he was pleased not only, to express his thorough approval of the plan, and to admit its merits, but he gave orders for it to be adopted at some of the principal Military stations without delay.

Opinion of the Commander-in-Chief.

43.—Previous to this, I had also designed a model latrine and urinary, which after being approved of by the Quarter Master General of the Army, and the Chief Engineer in this province, the Punjab Government has directed to be constructed as an experimental measure in every station where European troops are located. They not only combine the principles and advantages I have described above, but occupy a very small space, are easily kept clean, and can be erected for a tenth part (or less) of what the ordinary buildings cost.*

Model urinary and latrine designed by Dr. Hathaway.

44.—They have now been in use at several stations for a period varying from four to six months, and the reports of the Military Committees ordered to enquire into their working have begun to come in.

Adopted at every station for trial.

45.—To obviate the necessity of constructing one of these buildings for every barrack, I turned my attention, in conjunction with different Engineer Officers, to the feasibility of altering the present latrines and urinaries, so as to embrace the main advantages of the plan I advocate. This has been done as an experimental measure at Lahore, Jullunder, Peshawur, and elsewhere, with perfect success, and at a mere nominal cost.

Practicability of altering the present latrines.

46.—But, before dismissing this part of the subject, it must be emphatically stated that unless a thorough and complete system of regimental supervision be kept up, not only for a certain period but throughout the year, neither this nor any other scheme for improving the conservancy of the European lines will succeed.

Daily supervision absolutely necessary.

47.—There must be a perfectly organized plan, with rules for the guidance of each individual, and not only must every one—from the sweepers up to the Regimental staff—have his own separate duty assigned him, but, in case of neglect, the re-

An organized plan required.

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* Dr. Hathaway here refers to plans accompanying his Report but which we cannot reproduce.—Ed. *M. Q. J.*

sponsibility must be fixed upon some one against whom the neglect or want of supervision rests.

The best proof of its being properly followed.

48.—It is one thing to give an order, and another to see it properly carried out; but in a regiment, where we see such close attention paid even to little matters, there can be no difficulty in laying down an efficient plan and having it acted up to. As long as there is any thing to offend the senses, the supervising Officer may rest satisfied that the system is only imperfectly followed, and no excuse should be accepted in justification.

A sweeper to remain at each latrine during the day.

49.—At each latrine one of the sweepers must be stationed during the day; they can make their own arrangements as to relieving each other, but the present practice of allowing them to be absent through the greater part of the day in the bazaar, or at their own homes, or smoking in the cook-houses, should be peremptorily put a stop to: nor should they be employed in attending to dogs or poultry belonging to the men, or any other duty whatever.

Advantage of frequent inspection by different Officers.

50.—The greater the number of supervising Officers and the oftener the latrines are visited, especially at uncertain times, the greater will be the degree of cleanliness maintained, not only by the sweepers but by the soldiers themselves.

Method required more than increase of establishment.

51.—I am constantly told that the establishment allowed by Government is too small to work the system efficiently, but I cannot say that I admit it. What is required is method, and I conscientiously believe that, if double the number of sweepers were entertained, there would be no real improvement.*

Waste of time and labor.

52.—These men waste a great portion of their time and labor in merely sweeping up leaves, dust, and litter from the high road in cantonments, or the main streets in the bazaar and lines, while large accumulations of filth, and refuse matter are concealed from view, and left to poison the atmosphere where it is not seen.

Places requiring inspection, where disease is generated.

53.—An inspecting Officer should walk down the rear of his lines, and a Magistrate go into the back streets and lanes of a city or bazaar, if they wish to know the true state of things under their charge. It is in these places that small-pox and typhoid fever have their origin, but it must be remembered that, although generated, they do not remain there. We ourselves may never enter such plague striken spots reeking with the stench of foul drains and putrid matter of every description, the garbage of the slaughter-house, and the offal from the cattle yard; of unwholesome trades carried on in dirty houses which are never cleaned, never white-washed, which from year to year are never ventilated by the pure air of heaven,

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* *Note.*—See the report of the Delhi Committee confirming my opinion on this point.

and in which, after death has entered and the corpse been removed, no sanitary measures are ever adopted for the purification of the building.

How extended to the Officers and troops.

54.—But our tradesmen, of whom may be specially mentioned the baker, the butcher, and the milkman, as supplying us with the daily necessaries of life, and the families and relatives of our domestic servants, all live in these fearful spots, and in this way disease is brought to our own thresholds. No personal precautions on our part can prevent this, unless we strike at the root of the matter and remove the evil at the fountain head.

Trenches for burying filth.

55. I am of opinion that the trenches in which the filth is deposited, should be excavated and filled in by Bildars or Coolies, but not by the sweepers, whose sole duty is in the lines. I think, also, that a conservancy cart should be allowed to each European hospital, as was formerly the case, and that the filth from the Regimental and Sudder Bazaars should be removed by the same means. It is quite useless to expect that men can or will do this work efficiently; they may go through the form of carrying away a basket of litter, but the worse kind of filth is either concealed, or thrown down into the first ditch or hollow they come across.

Not to be used for fluid refuse.

56.—The fluid refuse should not be poured into the trenches, but into circular pits, as it would necessarily flow over the bottom of the whole trench, and become an insufferable nuisance.

Conservancy carts.

57.—The common carts, and wretched cattle of the country, should not be used for conservancy purposes, as the slowness of the pace, and the smallness of the load, prevent any efficient cleansing of the lines daily as it ought to be done. I trust to see carts built on a proper model, lined with zinc or sheet iron, and made to tilt up from the axle, so as to admit of being immediately emptied. Commissariat bullocks ought to be allowed by the Department, as is done in many stations.

The trenches to be near the station.

58.—Another very necessary caution is not to let the trenches be too far off, so as to prevent the carts from making three trips, at least, every day. By the present vicious system, the whole accumulation of the day remains in the latrines from 7 o'clock in the morning till 5 or 6 in the evening, and it is here where the real danger lurks during an outbreak of cholera. It should be remembered that the object is to remove the excreta rapidly and frequently, and the plan of burial in the trenches is so thoroughly effectual, that it is far better, in a sanitary point of view, to have the trenches half a mile distant, and thus be able to clear away all refuse matter three times a day, than to take it double that distance, and only make one journey per diem. This mistake I find existing at every station, and it is a very serious one. In our jails, all the refuse is buried in the garden, and being rapidly decomposed, from the shallow depth of ground it occupies, no inconvenience is ever experienced.

59.—Whether the evidence furnished by such high authorities as Liebig and Alison, who show most clearly that Cholera is caused by the exhalation from fæcal matter, be accepted by us or not, it is clearly our duty to guard against the *possibility* of risk from this cause ; and it may, with great reason, be shown that the European soldier has to visit his focus of contagion every day, which the Officer is exempted from. This may have more to do with the different ratios of attack and mortality in the two classes than is generally surmised.

Cholera propagated by fæcal exhalations.

60.—I believe myself that the custom and habit of the Asiatics in this respect, is much more consistent with true sanitary science than the use of public latrines, which we are trying to introduce among them. It is the concentration of decomposing animal matter in one spot that in a tropical climate renders it so dangerous to health, added to the necessity of removing it sufficiently often, and which, if found to be a matter of such difficulty in the case of single Regiment of 800 men, would be an impossibility with the dense population of a large city.

The advantages of the Native system.

61.—Certain it is, that the practice of the natives of this country is in strict accordance with the Divine ordinance that was given to the first great camp the world ever saw, and the general laws for the preservation of health and prevention of epidemic disease or contagion, are as applicable to India in the present day, as they were centuries ago to the children of Israel.

In unison with Divine Ordinance.

62.—It is a startling fact that at the time of the Cholera visiting England, the one class of people who almost totally escaped its ravages were the Jews. This statement is given on the authority of the Registrar General, and it will be found as follows in the report of the Committee appointed by Government :—*(Page 82 of Appendix by Professor Grainger.)* "In the great epidemic in London, of 1849, the exemption of Jews from Cholera was most remarkable. It is calculated that, out of 20,000 Jews residing in that city not more than 13 died from the disease, whilst the deaths from Cholera immediately round them amounted to 12,837. This would give to the Jews only 6 casualties in 10,000, whilst in Rotherhithe 200 in 10,000, in White-Chapel 60 in 10,000, in Shoreditch 90 in 10,000, and in the city of London 70 in 10,000 succumbed to it. These districts only are selected for the sake of comparison, as the Jews muster there the strongest."

Immunity of Jews from Cholera.

63.—The result is attributed to the extraordinary care with which the cattle used for meat are selected, and the scrupulous precautions adopted against diseased or unwholesome food ; this is done by employing inspectors to examine both the animal and the carcase, before and after death. No Jew ever purchases meat from an ordinary butcher's shop, or without ascertaining that it has the prescribed mark, which is affixed by means of small tin tickets bearing the stamp of the High Priest or his representative.

How accounted for.

Differences observed in India.

64.—In India, the Parsees are known to suffer less in proportion than any other classes; they occupy good houses, are very cleanly in their habits and dress, and consume wholesome food. In comparing different bodies of European soldiers, the Artillery have fewer casualties than any other troops; they are seldom overcrowded, get a variety of food from their own private mess fund, their duties are not trying, and they have much less night duty or exposure to weather.

And in Regiments.

65.—Amongst the individuals composing a European Regiment, and who occupy the same building and, hence, breathe the same atmosphere, the statistical tables, that have been compiled from the official returns furnished by the Medical Board for a period of several years, show conclusively that the smallest ratio of deaths from Cholera occurs amongst the children, the next amongst the women, and the highest amongst the men. The difference may be easily accounted for, on the broad laws that have been every where recognized as effecting a predisposition to the disease. The men are exposed to fatigue and weather, are more careless of their health, and have their constitutions more or less weakened by intemperance and other vices. The women are of temperate habits, have no duties which cause them to be exposed to the sun, rain, or night air, never sleep on the ground or out of doors, and have more resources in their family duties to occupy their minds; they do not smoke, and do not therefore require an inordinate quantity of water to satisfy their thirst. The children have lighter clothing which is oftener changed, and are bathed frequently, while their diet is more simple, and yet more varied; they partake sparingly of water suffer no exposure, and are not depressed by fear on the outbreak of an epidemic.

Soldier's Rations.

66.—On the subject of food, there are a few points which come within the scope of my enquiry. Generally speaking, I consider that the rations supplied to the European soldier, when proper supervision is maintained, are of good quality, and fully equal to what many Officers obtain. But, I think, that a greater variety, and better method of cooking, is urgently required. Less meat should be consumed in the hot weather than in the cold season, and instead of beef being served out five times a week, and eaten twice a day, it would be much more conducive to health if curries, stews, soup, fish, rice, and puddings, could form part of the dietary, for two days in every seven.

Improvements suggested.

67.—I see no difficulty, if the Officers of the army would take up the question, why a comfortable mess, with the adjuncts of a clean table cloth, delf plates and mugs, might not just as easily be effected for all, as it is in the Artillery, instead of letting the men dine off bare tables, eating their food from tin panikins, in a rough kind of manner, with a feeling that the meal is not enjoyed and appreciated as it might be.

Fire-places used in Cook-houses.

68.—The fire-places, instead of being composed of a few loose bricks or pieces of mud put up by the cook-boys, ought most certainly to be built by the Public Works' department, and be kept in proper repair. The best plan that I have seen, is in

daily use at Sealkote, constructed by the Surgeon of Her Majesty's 7th Dragoon Guards. It appears to have all the advantages of Captain Grant's patent, without being expensive either in its structure or the amount of fuel required. A thin plate of sheet iron going over the whole, enables the soldier to warm his cup of coffee or tea at any time in a few minutes, which cannot be effected at the present open fireplace ; the smoke, also, is consumed, and there is a great saving in the wood expended.

Sheep feeding on human ordure.

69.—It being proved on the most conclusive evidence, as witnessed at Meean Meer, where the experiment was fairly tried in the presence of the Commissariat and other Officers of the staff, that sheep will greedily partake of human ordure, even if they have been otherwise properly fed, I would strongly urge the necessity of never allowing the animals to be kept at the cattle-yard, or in the precincts of cantonments, where, in going out either to graze or drink water, they must necessarily pass over ground which will supply them with the means of gratifying their depraved taste, and which no care on the part of the shepherd can possibly prevent.

How to be prevented.

70.—I would have paddocks set apart at some considerable distance beyond the cantonment boundary, just as the grass preserves for the use of the Cavalry and Artillery are at present. An enclosing wall and shed should be erected, and the contractor should be bound to keep his sheep there, and in sufficient numbers. What is done for the benefit of the Government horses might be equally done for the benefit of the soldiers. It would relieve the Commissariat from much opprobrium, and would satisfy the minds of both Officers and men, nor could any difficulty be raised on the part of the contractor, if it formed a regular clause in the contract. In each corner of the enclosure a large lump of salt should be kept throughout the year.

Water.

71.—With regard to water, although it is a point of vast importance, yet on no subject have I found such great indifference and ignorance, in the course of my tour of inspection. While the Natives of this country are most particular in selecting the water they drink from the best and cleanest source, so much so that, in every station, there are one or two wells, which, " par excellence," have gained a fixed reputation, and to which every one resorts, the British soldier appears to be perfectly careless on the matter, so that he gets enough ; and the quantity consumed in the course of the 24 hours, during the hot weather, is enormous.

Boiled and filtered in the Punjab jails.

72.—In very few stations is the water filtered, even for the sick in hospital, and I failed to ascertain that it was done regularly any where, except at Peshawur. In the jails of the Punjab it is now a standing regulation, that, during four months in the year, viz., from June to September, all water used for drinking purposes is to be not only filtered but boiled, and I believe it to be a measure of great prophylactic value.

73.—When it is considered that the wells in this country are all open, that the water is close to the surface, that leaves of trees, dust and dirt of every description, and frequently insects and reptiles may be seen floating on the surface; that the water is carried in bags made of the skins of animals very imperfectly tanned, and used promiscuously either for drawing stagnant water out of a ditch or tank, or that required for drinking purposes; that there is no method of cleaning this bag or even of opening it to examine how dirty it may be inside; that in nearly every water-jar (where special care is not taken to prevent it) will be found organic vegetable and animal matter, frequently in the shape of worms and animalculæ visible to the naked eye, is it wonderful that health gives way to disease, and that fever, diarrhœa, and dysentery so abound?

Impurity of water, and its effect.

74.—The recent discoveries made by analysis of the different wells in London, abundantly prove that water may have all the external signs of being wholesome, that it may be bright and sparkling in appearance, cool and agreeable to the taste, and yet that these very qualities of transparency and coolness are produced from the decay of organic matter, with which it had been previously contaminated.

Purity of water only ascertained by analysis.

75.—But by boiling, the germs of vegetable and animal life are destroyed, the earthy and saline particles which are held in solution are precipitated, and, all noxious matter being thus eliminated, nothing more is required than to allow the water to cool slowly in the vessel in which it has been boiled, and then to pass it through a filter of sand and charcoal, which completely restores its briskness and taste.

All impurities got rid of by boiling.

76.—Another point in which the conservancy of jails is superior to that of barracks in this country, is the great care bestowed on the constant washing of the floors and walls, which otherwise would become animalized—so to speak—by the effluvium and emanations from the human body, and are capable of exciting or predisposing to disease of the deadliest character. This is the most fruitful source of infection, where any large number of persons occupy the same building by night and day, and every care is required to guard against the danger, which, though unseen, is capable of being demonstrated in a palpable manner.

System of washing the walls, &c., in jails.

77.—In fact, both reason and experience show us that, it is as necessary to present a fresh and clean surface when the floors and walls are thus animalized from the exhalations of the human body, as it is to move a standing camp after the expiration of a few weeks to fresh ground. This is attempted partially in our barracks by white-washing, but it is done only once or twice a year, which is useless. In the jails of the Punjab it is a standing regulation, rigidly enforced, to wash the floors (and walls to the height of 6 feet) with a solution of clay and cowdung laid on very thin, three times every week. It is a custom adopted from the Natives, and extensively practised in all parts of the Empire, especially in the Bombay Presidency.

Sanitary advantages of doing so.

Not only is the atmosphere of the apartment found to be cooled and purified thereby, but all vermin, which so abound in the barracks of our European soldiers, and cause such annoyance and loss of sleep, are thereby effectually destroyed.

Immunity of the Lahore jail from Cholera in 1861.

78.—In the central jail at Lahore this washing is done daily, the wash being prepared from a species of "Fuller's earth," which dries of a light color, and has a cool and clean appearance. In August last, when the Cholera was raging in the barracks at Meean Meer, and the mortality reached nearly 25 per cent. so that a fourth part of the garrison was destroyed, not a single case appeared among the inmates of the prison, (comprising 2,200 convicts and 200 guards) although the building is situated in the same plain, and within $2\frac{1}{2}$ miles of the barracks, with nothing to intercept or deflect the course of the wind.

Personal cleanliness.

79.—Personal cleanliness is not enforced amongst the troops so much as it should be, especially in a tropical climate. If we consider that every adult exhales by the skin and lungs, in the course of 24 hours, three pints of moisture "loaded with organic matter ready to enter into putrefaction," that in disease it is both greater in quantity, and still more noxious in quality, and that it is necessarily absorbed by the clothes and bedding, can we wonder on being told, by those who have paid the subject most attention, that this noxious matter, if not removed, is again absorbed into the body by the action of the cuticle, and that poisoning by the skin is as certain and deadly in its effects as poisoning by the mouth?

Secretions of the human body noxious to health.

80.—The main point in all sanitary suggestions, in my opinion, is constantly to insist upon the fact, until we fully realize the idea and have it vividly impressed upon our memory, that the secretions of the human body are in themselves noxious, and that our duty is to assist nature in her efforts to remove the elements of danger, instead of concentrating and intensifying the poison. This is the real object in bathing, in wearing clean clothes, in exposing bedding to the atmosphere, in cleansing the floors and ventilating the rooms of our dwellings, and establishing a proper system for carrying away and burying all excrementitious matter.

Trees, their use in a sanitary point of view.

81.—A point on which a few remarks are needed, is that of trees in cantonments. I believe from the facts that have been officially brought to my notice, that much harm is done by the indiscriminate cutting and lopping that occurs in many stations, when an epidemic appears. Instead of being taught to consider trees as a valuable protection against malaria and contagion, we are, without any reason made to look upon them as the promoters of disease. But, this is directly contrary to fact. We have not only conclusive proof that stations have been rendered permanently unhealthy by cutting down trees, but our common sense shows us that, if injurious, the health of the Officers, whose houses are surrounded by them, would necessarily be worse than that of the private soldier who occupies a barrack on an open plain. That they have nothing to do with causing

cholera, is clearly proved by the fearful experience gained at stations like Meean Meer and Kurrachee, where it is difficult to get any tree to grow.

Soldiers' Gardens.

82.—I would advocate not only the encouragement of soldiers' gardens, but I would specially urge the advantage of grass and trees being planted, so as to afford protection from dust, and a constant relief from the glare and reflection that meets the eye on all sides of the soldiers' barrack and hospital. The small strip of ground required for this purpose would not interfere with the parade ground, and it would provide amusement and occupation to the men, as well as an agreeable change to the women and children. But, assistance must be given by Government. At present, soldiers' gardens fail from want of water, from their being too far distant from the barrack to be a source of enjoyment, and from their being necessarily neglected when a regiment is moved to another station.

The advantage of grass and trees near the barracks.

83.—If the grass, trees, and garden were to be considered as forming an essential part of the barrack square, the trifling expense required in keeping them up would be amply repaid to the State by the advantages resulting therefrom. A comparison of the hospital returns would alone prove this, for ophthalmia, which is so common in many stations among the troops, is now unknown in the Punjab jails, and it is attributed by the Medical Officers to the measures described above, which have been for some years adopted in our prisons.

Light.

84.—Next to air comes light, and here there is great room for improvement. The lamps provided in the barracks and hospitals can only be designated as unworthy of their name and object.

The bad lamps in barracks, how to have the evil remedied.

85.—I would again urge the advantage of evening—and not day—inspections, towards remedying the evil. Let periodical reports be sent in, showing that the barrack is gloomy and the atmosphere smoky, that the men cannot see to read or write, that they are forced either to provide lights of their own, or that they lounge about in idleness and dullness, driven from sheer ennui to the canteen, or—still worse—to the bazaar. The reading-room, unless established in each barrack, as is the case in the 7th Dragoon Guards at Sealkote, does not meet the difficulty; all the men could not gain admittance if they wished, and the sick in hospital, the women and children, are not allowed to enter. Let any one visit a barrack in the long winter evenings, and say if the picture is overdrawn.

The best kind of lamps.

86.—The best kind of lamps for constant use are the ordinary American ones; they burn any kind of oil, give a clear steady light, are easily cleaned, and do not get out of order. If purchased wholesale, they might be landed in Calcutta and Bombay for a very small sum. The best proof of their being the best and cheapest kind available is, that they are used in the soldiers' reading-rooms and theatres, and the messes of the Non-Commissioned Officers.

87.—Of this, I feel convinced, that if the existing state of things were known and understood by the Government, it would be altered without delay. It is incumbent on every one who has the interest of the European soldier at heart, to represent the matter earnestly and perseveringly until the evil is remedied. And let it be clearly stated that, it is not the mere state of discomfort and inability to do anything without better light that I consider so objectionable, but the results to which it leads.

The case not fully understood by Government.

88.—The hours that hang heaviest on the soldier in this country are those of the evening, and, at the same time, they are the hours which are fraught with the greatest danger. Instead of being driven to beguile the time in the bazaar, where intemperance, vice, and disease await him, every inducement should be offered to make the barrack of the soldier not only his home but a comfortable one.

Evils resulting from want of light in the barracks.

89.—The subject naturally leads to the consideration of social vice, and it is this point which I have purposely reserved to the last, because I believe it to be the greatest source of disease among the British troops in this country, and the greatest cause of their being predisposed to the attacks of cholera, fever, and dysentery, which the Officer living in the same station, breathing the same atmosphere, and occupied in the same duties, finds himself exempt from.

Social vice a great source of disease.

90.—I am aware that the enquiry is one which is frequently evaded by writers on military sanitation, and passed over in the annual reports of Medical Officers, through false delicacy, or in the hopelessness of suggesting any practical remedy. But the question is of vital importance. It affects the present as well as the future health of thousands—of the child unborn—the girl just married—and every rank and class of our soldiery, from the recruit recently arrived from England to the broken down and prematurely old-invalid, who is being sent out of the country incurably destroyed, at an age when other men are in their prime of life.

Importance of the question.

91.—Not only does venereal disease keep a large proportion of the army constantly in hospital, but the necessary treatment combined with the ravages of the disease, undermines the constitution, cripples the bodily powers on the march or in the field, and predisposes to other diseases, especially rheumatism, which affection swells very largely the annual number invalided and in hospital.

Its effect upon the whole army.

92.—The Medical Returns of the Principal Inspector General's Office, and other authentic records, show the following to be the number of soldiers annually treated for Syphilis alone :—

Evidence furnished by the Medical Returns.

	Annual admissions, to strength.	Period of Observation.
Bengal Army.....	17 per cent,	Average of 6 years, 1850 to 1856.
Madras Army.....	22 „	do. 20 do. { 1829 to 1838. / 1842 to 1851.
Bombay 1st Fusiliers	25 „	do. 8 do. 1846 to 1853.

93.—In 1861, the general return of the whole Bengal Army submitted to the Commander-in-Chief, showed that, in the month of August, 1,734 men, (equal to *two* whole Regiments) out of a strength of 40,731, or 51 per 1,000, were treated for venereal affections in the European hospitals during the month. This number proves how enormous must be the aggregate in the whole year.

Loss of two entire regiments throughout the year by this disease.

94.—For forty years, viz., from 1797 to 1835, Lock hospitals were in existence in the three Presidencies, one being established at every large Military station. They were abolished in Bengal in 1830, and in Madras five years later, but, though badly managed, being left almost entirely to Native agency only, the following statement, prepared by Dr. Waring from the returns in the Office of the Medical Board, shows how fearfully the disease increased after their abolition, proving incontestably that they *must* have been of real efficiency in checking the virulence of the scourge.

The benefits of Lock Hospitals.

	Years.	Per-centage of admissions (for venereal disease) to strength.	Remarks.
Lock Hospitals in existence.	1829	11·6 per cent.	
	1830	10·6 „	
	1831	11·8 „	
	1832	14·0 „	
	1833	26·8 per cent.	Year of Famine. Prostitution increased a hundred fold as a means of existence.
	1834	32·2 „	Ditto.
Lock Hospitals abolished.	1835	28·4 per cent.	Lock Hospitals abolished.
	1836	26·1 „	
	1837	24·2 „	
	1838	26·8 „	
	1842	20·5 „	
	1843	17·5 „	
	1844	16·0 „	
	1845	19·6 „	
	1846	20·9 „	
	1847	29·7 „	
	1848	35·9 „	
	1849	32·7 „	
	1850	28·1 „	
	1851	27·1 „	

95.—On the other hand, by the system pursued in the Belgian army, syphilis appears at the present time to be almost unknown. At Brussels, in the year 1859, out of a garrison of 3,500 soldiers only eleven men were in hospital, and a great diminution in the prevalence of the disease among the civil population,

Example of the Belgian Army.

had also resulted, so that, whereas in London every fourth man suffers from syphilis in some form or other, in Brussels the proportion is only one in fifty-six !*

Results obtained at Meean Meer.

96.—During the last 2 years a Lock Hospital has been established at Lucknow and Lahore. The working of the latter has been fully reported upon by Dr. Ross, Surgeon to H. M.'s 21st Light Dragoons; the result at the end of the year, was not only a decrease in the number of prostitutes of nearly 32 per cent., but a remarkable diminution of cases of disease occurring amongst the soldiers, while at the same time, the disease was of a much milder nature. This last point is too much lost sight of. It is the virulence of the infection that is most to be dreaded, and which, in tropical climates and among an Asiatic population, has always a tendency to be increased or intensified by the duration of the disease.

Authorities quoted in favour of the measure.

97.—Out of a long array of names of Medical Officers who have urged the absolute necessity of re-establishing military Lock Hospitals in India, on the same system which has proved so effectual in the Continental armies, I would only mention those of

Dr. C. Mackinnon, Inspector General of Hospitals, Bengal,
Dr. F. J. Mouat, Inspector General of Jails, ,,
Dr. Norman Chevers, Secretary to the Medical Board ,,
Dr. Arnott, Deputy Inspector General of Hospitals, Bombay,
Dr. Murray, Deputy Inspector General of Hospitals, Madras,

who have all written strongly and earnestly in favour of the measure. Higher authority or greater talent and experience could not be sought for, and the necessity of the provision may be at once admitted.

Modification suggested.

98.—But, if the re-institution of these establishments on the Continental system be not sanctioned, I would suggest the advantage of a Venereal ward being added to every Government dispensary, and that all public diseased women be sent there for treatment, by the co-operative agency of the local Civil and Military authorities.

Agency employed.

99.—The Cantonment Magistrate, Kotwall, and Bazaar Serjeant, actively assisting the Quarter-Master, Medical Officer, and Provost Serjeant of a Regiment, and working on a carefully elaborated plan, under the encouragement of Government, would very soon reduce the fearful pest that is destroying the vitals of our army in India, to a minimum amount of danger.

Details of plan.

100.—Every prostitute residing either in the Regimental or Sudder Bazaars should be registered, and her dwelling place numbered, so that not only could a soldier at once point out the place where he contracted the disease, but the house would be marked and avoided by his comrades. She should be removed to the dispensary when ill, placed in a separate ward with enclosed yard, and supported while

Note. * These statistics have been obtained from the valuable articles on the health of the European Army published by Dr. N. Chevers in the "Annals of Indian Medicine."

under treatment by the allowance of daily rations, just as other poor patients are. A certificate should be given to each as a voucher for her being allowed to live in the Bazaar, and on this certificate each admission to Hospital, with the date of her being discharged cured, should be recorded.

Examination by a Medical Officer necessary.

101.—They should be examined every week by a Medical Officer specially selected, who should receive an addition to his pay, as a fixed staff allowance for the duty. Any women not attending, to be fined for the first omission, (unless she be in Hospital) and turned out of the Bazaar on any future neglect of a rule on which the successful working of the whole measure would mainly depend.

Cost how to be defrayed.

102.—The expence might be entirely defrayed out of the Canteen and Grazing funds: from the latter a large balance is in hand in many stations. Such a system, superintended by Officers *directly chosen* for the duty, and who evince an earnest desire to benefit all classes alike, by mitigating a disease of the direst nature, terrible in its suffering as well as devastating in its effects, a disease that is rapidly sapping the efficiency of our army, and reducing it, in fact, to only a proportion of its nominal strength, would produce immediate and permanent good results, as has already been abundantly proved in the French, Belgian, and Prussian armies.

Arguments in favour.

103.—Without opening up the question either of morality or expediency, let us take the high and broad ground of humanity as our guage. If the law prohibits the sale of noxious liquor in cantonments, why should it not equally prevent a more deadly and subtle poison from attacking the troops located there? If it provide Leper Hospitals and Lunatic Asylums for one class of disease, and *compel* the removal of those so affected for proper treatment and separation from the mass, why should it not act with equal decision and promptness in the case of those, who are not only diseased themselves, but communicate the disease to others with a certainty and malignity that is unknown even in the most contagious maladies, and with such unerring rapidity, that it is increased a thousand fold within a brief period of time; while the future effects on the system are equally destructive, causing death, broken down constitutions, and injury to the second generation by an hereditary taint being communicated to the offspring. The validity of the argument is admitted in the case of a person affected with small-pox, who is prevented by law from appearing in the public streets; why not, with equal firmness and justice, apply the same rule in dealing with a disease equally communicable?

The financial benefits.

104.—On financial grounds, the question admits of still less discussion, being confined within very narrow limits. Year after year, the returns published under authority show that sickness, mortality, and invaliding, are greater among the European soldiers in India than that of any other class; and if this excess is caused in any way (as is shown to be the case) by *preventible* disease, or defective sanitary arrangements, the expense of renewing the perpetual loss by a fresh supply, the sending out batches of young recruits to fill up the gaps in the ranks of

trained and disciplined soldiers, is a far more costly system than the simple precautionary measures that have been persistently advocated by abler pens than mine. The Government shows a liberal and humane policy in the treatment of the sick, as testified by the spacious Hospitals, profuse supply of medicines, and highly paid staff of Medical Officers. Let an equally sound policy, and better economy both of life and money, be established by the *prevention* instead of the cure of disease.

The evil daily increasing.

105.—The special evil that I have described is one that cannot remedy itself; it is increasing daily with more and more deadly effect, and the time has come when some organized plan for the mitigation or removal should be attempted. I have offered these remarks for the earnest consideration of Government, being convinced that it is a subject which must be grappled with, and that promptly and energetically, if we wish to save our army from further inefficiency and decay.

106.—I proceed now to the consideration of those points, illustrating much of what I have stated generally above, which presented themselves to notice during my sanitary inspection of the Stations marginally noted; it being merely necessary to premise that in every case, due notice was given of my intended visit, and also that my observations were made, and notes recorded, in the company of Officers deputed by the commanding authority to accompany me in my inspections.

Stations visited.

1. Umballa,	12. Mooltan,
2. Delhie,	13. Umritsur,
3. Meean Meer,	14. Jullunder,
4. Sealkote,	15. Kangra,
5. Murree,	16. Dhurmsalla,
6. Rawul Pindee,	17. Jutogh,
7. Attock,	18. Soobathoo,
8. Peshawur,	19. Dugshai,
9. Nowshera,	20. Kussowlie,
10. Campbellpoor,	21. Phillour,
11. Derals mael Khan,	22. Ferozepoor.

* * * *

[As before observed, we here omit a large portion of this Report, referring to individual stations. We append, however, certain general considerations of interest, founded on Dr. Hathaway's experience.—Ed. *M. Q. J.*]

Explanation respecting the principal subject of report.

444.—Much of what has been written on the sanitary state of the different barracks I have inspected, will necessarily appear to be a monotonous repetition of the same evils. But, as I am required to report upon the state of conservancy at each station separately, the practical object had in view would not be attained by any remarks of a mere general nature. By putting on record the special defects of each cantonment, it is in the power of the authorities to apply the necessary remedy, and not to rest satisfied until it is done.

Gravity of the question.

445.—But, lest it may be thought by those who have not paid the subject the attention it deserves, that the question of conservancy has little to do with health or disease, I would briefly recapitulate what are the facts gained by experience,—experience the most valuable because purchased at the expense of life.

Reasons adduced.

446.—It has been already proved that all excretions and exhalations from the human body are noxious to health, and that, under certain circumstances, they are as destructive to existence as the most virulent poison. It is shown by the cases cited by Professor Alison, Drs. Lindsay, Budd, Marshall, and Prichard, in England, and the Researches of Liebig and Thiersch, on the Continent, that cholera is, in some cases, produced by the emanations arising from fæcal matter.

The European soldier is most exposed to the danger.

447.—The British soldier serving in these provinces is exposed to this danger more than any other class either of Europeans or Natives.

Increasing fatality of cholera.

448.—The official medical returns show that, whereas in all other diseases there has been a gradual decrease of mortality among European troops in the three Presidencies, cholera alone presents a marked universal increase in the proportion of deaths to attacks.

Epidemics how generated.

449.—Wherever the laws of nature are disregarded, where—through ignorance—such an artificial state of things is produced as to localize and foster disease, there the isolated case of sickness grows into an Epidemic, and pestilence sweeps off its victims with a relentless hand.

Similarity of origin in typhus and cholera.

450.—And we have on record the most conclusive evidence to show that the same cause which produces typhus in England, will generate either jail fever or cholera in this country, according as it may exist in particular localities and classes.

The Mahamurree or Indian plague.

451.—Let any unbiassed person read the published account of the Mahamurree or Indian typhoid plague, as it appeared at Kattywar in 1815, and in the mountainous region of Kumaon in 1851 and 1852, and say if he can honestly arrive at any other verdict than that recorded, as follows by Dr. Chevers :—

"This Epidemic affords one of the most domonstrative and convincing evidences, on record, of the fact that pestilential disease may be engendered as the *direct consequence of utter neglect of all hygienic rules and sanitary precautions.*"

Cholera in Kumaon.

452.—Let me refer to one more case, because, like the last, it occurred in the Himalayan range, at an elevation of nearly 5,000 feet above the level of the sea, proving that the epidemic was not caused in any way by low marshy swamps or a high temperature, and it equally show the intimate connection between disease and imperfect sanitary arrangements. I extract it from Dr. J. Browne's report on the cholera of 1856 in Kumaon.

Dr. Brown's report of its originating from dirt.

453.—"The ravages of this epidemic were so fearful that it is computed 6 per cent. of the inhabitants of the valley were destroyed by it. The numbers who died was 17,334, according to the Government returns. The habits of the inhabitants

are extremely dirty, the flesh of the buffalo and pig is eaten freely, and spirituous liquors—to a greater or less degree—are indulged in by all classes. The houses are formed in squares, the central space being filled with filth of all descriptions giving out most fetid effluvia. My experience of the places in which I found cases of cholera would lead me to believe—what all our experience of this disease elsewhere illustrates—that in proportion to the sanitary defects of a house or locality, so will be the mortality from cholera. The immunity of the royal family and several of the aristocracy living in the same town from cholera confirms this, as they occupied houses provided with good sanitary arrangements."

Present sanitary condition of many towns and cantonments precisely similar.

454.—Does not the above description tally in all essential points with what is at present the condition of many of our large cities and cantonments, such as I have shown to be the case at Delhie, Peshawur, and Umritsur? Is there not the overcrowding and want of ventilation, the reeking effluvia of the latrines, the decomposing excreta remaining unremoved and unburied? Does not the food correspond too closely with that consumed by the European soldier, and the same exception to be met with in those whose lot affords them protection from the evils he is exposed to?

Immunity of European officers and others from cholera.

455.—Not only does the case of the European Officer present a most marked contrast to the private soldier, as regards immunity from disease and recovery when attacked, but the same result will be found to exist with other classes in the same regiment that approach the soldier still nearer in his social position and daily circumstances of life.

Analysis of Medical returns.

456.—Struck by the meagre information furnished in the usual hospital returns, which aggregate all cases under the one comprehensive designation of "rank and file," and anxious to ascertain how far the particular occupation of any class in a Regiment, with the collateral circumstances connected therewith, might tend to exempt its members from disease of an epidemic character, I suggested an analysis of many of the cholera returns of last year, according to a new form, and which I think well worthy of earnest consideration.

Striking results exhibited from this analysis.

457.—I find from the returns of Regiments which suffered severely from cholera in different parts of the province, that the great bulk of cases occurred amongst the unmarried privates who had no special duty assigned them, while those of their comrades who were married, or who had any particular occupation to employ their time connected with the duties of the Regiment, were much more exempt. The same result appears also both in the case of the commissioned and non-commissioned Officers, (with the exception of the Sergeants of Companies whose duties were very severe.) The servants including, even sweepers and hospital attendants, almost entirely escaped; while, on the other hand, the men of the Band suffered very

severely, and this has been remarked as a peculiar fact in several Regiments, not only in this but in former years also.

Reasons assigned for the same.

458.—It will be at once seen, on looking at the following table, in how many cases the circumstances of a particular class in the Regiment differ widely from that of the ordinary private. Thus the Staff Sergeants, and those who occupy detatched bungalows and the end-rooms of the barrack, or who sleep away from the barrack altogether, escape the overcrowding and poisoned atmosphere at night time, while others, such as those employed at the Mess or the Officers' quarters, obtain a greater variety of food, and better cooking. The majority are exempted from the fatigue and exposure of night duty, many escape parade altogether, and, lastly, all have some occupation which engages their mind throughout the day, and being, as it were, the subordinate staff of the Regiment, they are careful to avoid intemperance and vice, or excesses of any kind, for fear of loosing their appointments :

459.—Tabular statements in illustration.

	Total strength of each class.	Rank and special duty or occupation.	Cholera. No. of cases.	Cholera. No. of deaths.	Remarks.
89th Regiment at Umballa.	27	Commissioned Officers, ...	„	„	Of the total number of cases 17 occurred in camp, and 44 in the lines. Of these 44, it is worthy of notice that 15 cases (or one third of the whole) were in hospital when attacked with the disease.
	5	Officers' wives, ...	„	„	
	3	Do. children, ...	„	„	
	108	Warrant and Non-Commissioned Officers, ...	1	1	
		Privates employed on special duty,	Not separately shewn.		
	39	Do. married, Not employed	3	2	
	716	Do. unmarried, on special duty,	54	39	
	20	Bandsmen, ...	3	3	
	„	Wives of Non-Commissioned Officers,	„	„	
	„	Children of do. do. ...	„	„	
	39	Soldiers' wives, ...	3	2	
	57	Do. children, ...	9	8	
	60	Cook boys, sweepers, and hospital servants, ...	1	„	
82nd Regiment at Delhie	21	Commissioned Officers, ...	„	„	
	3	Officers' wives, ...	„	„	
	4	Do. children, ...	„	„	
	51	Warrant and Non-Commissioned Officers, ...	4	2	
	53	Privates employed on special duty,...	3	„	
	63	Do. married, Not employed	4	2	
	782	Do. unmarried, on special duty,...	70	35	
	27	Bandsmen, ...	„	„	
	10	Wives of Non-Commissioned Officers,	3	3	
	5	Children of do. do. ...	1	1	
	49	Soldiers' wives, ...	11	4	
	70	Do. children, ...	13	4	
	198	Cook boys, sweepers, and hospital servants, ...	5	5	

	Total strength of each class.	Rank and special duty or occupation.	Cholera. No. of cases.	Cholera. No. of deaths.	Remarks.
94th Regt.	23	Commissioned Officers, ...	„	„	
Left wing at	3	Officers' wives, ...	„	„	
Umitsur,	5	Do. children, ...	„	„	
Right wing at	156	Warrant and Non-Commissioned Officers, ...	26	22	
Meean Meer.	40	Privates employed on special duty,...	3	„	
	12	Do. married, Not employed	2	1	
	838	Do. unmarried, on special duty	244	173	
	30	Bandsmen, ...	18	14	
	18	Wives' of Non-Commissioned Officers,	2	2	
	16	Children of do. do. ...	4	4	
	19	Soldiers' wives, ...	3	3	
	13	Do. children, ...	„	„	
	145	Cook boys, sweepers, and hospital servants, ...	4	1	
51st Regiment	37	Commissioned Officers, ...	3	1	
at Meean	5	Officers' wives, ...	„	„	
Meer.	2	Do. children, ...	„	„	
	107	Warrant and Non-Commissioned Officers, ...	30	26	
	30	Privates employed on special duty,...	3	3	
	39	Do. married, Not employed	20	12	
	818	Do. unmarried, on special duty	414	204	
	33	Bandsmen, ...	10	8	
	19	Wives of Non-Commissioned Officers,	5	3	
	27	Children of do. do. ...	6	4	
	39	Soldiers' wives, ...	16	13	
	53	Do. children, ...	20	18	
	174	Cook boys, sweepers, and hospital servants, ...	3	1	

460.—If this system could be extended, by some of the present duties being taken in turn by the whole regiment, or if instead of 5 per cent. we could even find special employment for double that number, would not the same benefits be manifested? Is there not sufficient evidence to show that the result is not a mere fortuitous one, but that life and health would be largely saved, if we could employ many more of the privates in the same way? Is not the experiment worth trying? It is merely an extension of what has already been commenced, and with such marked good.

Advantages to be gained from extending the system of special occupation, or duties.

461.—Let these kind of appointments be largely increased, let the soldier feel that he is no longer a mere human automaton, that is wound up on the parade ground, and then relapses into mere animal existence during the next 24 hours, but appeal to his reason, and put him into some small post of honor or trust, and certain it is that the end gained will be a marked improvement both in the physique and morale of the army.

Ulterior benefits.

462.—I believe that a single day passed in a barrack would convince any one of the soundness of my argument, and would lead to the object I have at heart being secured. At the time of the outbreak of cholera at Murree in August 1858, I used to visit the depot very often with Sir John Lawrence, and was so struck with the listless appearance of the men and their total want of occupation, that I no longer wondered at their succumbing to the disease in such numbers.

Illustration of the evils of want of occupation.

463.—No one seemed to care about anything but how to get through the day, or to "kill time" as it was termed. Exercise and occupation were alike unknown to and unpractised by the majority. They had no gardens, they did not walk out, or play at any game, but each man lay on his bed, either smoking or sleeping until it was meal time. They would then get up, eat a heavy meal of beef washed down by a glass of grog, go to bed, smoke, sleep, and get up to eat again. In some cases, I was assured that they ate meat three times during the 24 hours, and there was no variety even in that; the same monotous dish of fried beef and onions appeared always on the table.

Details given.

464.—Let it ever be remembered that disease is to a great extent preventable. We get into the habit of referring all casualties to "the visitation of God," whereas, if we spoke correctly, the proper expression would be—"the visitation of man." Providence has given us certain laws for our guidance and observation, and as organised beings we must either obey those organic laws or suffer the consequences of our neglect.

Disease preventable.

465.—Strange to say, we admit the truism in many cases, and yet ignore it in others. We know that certain trades are injurious to health, and that others shorten life, but yet we know that, by the aid of Art, an antidote to the danger has been in every case discovered. We acknowledge that the act of entering a coal mine with any but a "safety lamp" is as clearly an act of madness or murder as that of scuttling a vessel, or exploding a magazine of gun-powder. We are horrified at a sanguinary battle or the loss of life occurring either by fire or shipwreck, we punish the man by whose neglect a railway or steam-boat accident occurs, and yet we see hundreds prematurely perishing around us from an epidemic, the cause of which, instead of regarding as equally evident, we choose in our blindness or wilfulness to ignore. It is possible to breed cholera or typhus, just as it is to poison the food or water that our fellow creatures partake of, and, where it is shown that these diseases arise from neglect and indifference on our part, we are as surely responsible for the lives of our fellow creatures, as if they had perished by an equally preventable accident caused by any act of our own.

Arguments in support of the axiom.

466.—Concluding then with this axiom—the preventability of disease, let us admit as an equally great truth, that it is in the power of every one to do something in his own sphere of action towards such an object. The officers of a regiment can do

The duty and ability of every one to assist.

much by providing occupation for the soldier, which will not only employ his time but engage his interest, and they can make the barrack a more healthy and comfortable home than it is at present. And the men themselves may do much in restraining their companions from the temptations of the canteen and the bazaar, from those excesses which, we are told, "are as the ways of death unto a man." Let no one despair because the task appears a difficult and arduous one. Where hand and heart combine, where our exertions in a good cause are continuous and not merely spasmodic, we may indeed hope to remove mountains.

Conclusion.

467.—The untiring exertions of earnest individuals, such as Dr. Letheby, Dr. Sutherland, and Mr. Simon in London, Dr. Angus Smith in Manchester, and Florence Nightingale in the Crimea, have already borne noble fruit. And we have the satisfaction of knowing that their example has stirred up others, that the attention of Government has been drawn to the subject of Military sanitary reform, as one of the pressing questions of the day, and that a Commission on the health and condition of the army in India is, at the present time, earnestly considering those gigantic evils, which require the interference of the State for their removal.

C. HATHAWAY,

Inspector General of Prisons,

and Special Sanatory Commissioner.

LAHORE, 14*th May*, 1862.

REPORT OF SPECIAL COMMITTEE ON DR. HATHAWAY'S SYSTEM.

DELHIE, 18*th November*, 1861.

1st. We are of opinion that the system advocated by the Principal Medical Officer of H. M.'s forces in India and the Special Sanatory Commissioner of the Punjab, and generally known as the "dry system" should be adopted in all the privies and urinaries in use by the troops. For the sake of convenience, we here note the principal features of this scheme; they are—

A. The absence of all lime from the privies, &c., whether used in the shape of quicklime as a sanitary measure, or employed in mortar, for the walls and flooring.

B. The reception of all urine and excreta in moveable vessels, which can be emptied into iron tank carts, and so removed to a distance from the barracks and buildings. This, of course, implies a strict prohibition of all drains, drain-pipes, or anything of a nature which will not admit of its being thoroughly rubbed and cleaned when necessary.

C. Keeping the pots, &c., used at a distance from the walls of the building in which situated, so as to prevent the men fouling the latter in any way.

D. Having the flooring composed of dry river sand for a depth of 6 inches, so that any defilement can be quickly and easily removed.

E. The provision of ventilation to the fullest extent consistent with privacy and protection from the sun.

F. Reducing the number of seats to a minimum, and forming them either of polished iron or wooden bars, which can easily be scraped and kept clean. These bars to be attached to moveable stands, so that they can easily be taken away and cleaned when necessary.

G. Keeping the internal walls always clean by having them *leeped* weekly by the sweepers.

H. The instant removal, as soon as used, of the pot or pan, and the substitution of a clean one for the next comer.

2.—Having considered the style of vessel best suited for the purposes intended, we are of opinion that the thick glazed earthen-ware pans, of the shape used in the Delhie jail, are the best fitted for the privies. They are cheap, easily kept clean, not quickly broken, and easily replaced in the event of any accident. As they are too shallow to prevent slopping, when placed too far from the person using them, we recommend their being set on a light iron stand or *teapoy*, so as to bring them within four inches of the top of the sitting rail.

3.—For the urinaries we recommend the standard tubs made of iron, thickly painted inside,* with enamelled iron or glazed earthen-ware covers, having an aperture leading into the pan of only one inch in diameter, so as to keep the effluvia from escaping.

4.—As regards the means for keeping these places clean, we are strongly of opinion that two mehters—at least—should be attached to every privy, one of whom should always be on duty; that he should be bound to remove, and replace with a clean one, every pan so soon as used; and that he should be bound on his engagement to "lepoy," without any extra expense to Government, the walls of the privy and urinal under his charge, to a height of 6 feet, once every week.

5.—We recommend that small huts, each 10 × 8 feet or thereabouts, be erected close to the privies, as a residence for the mehters attached to them.

6.—We further recommend that these mehters be relieved of all work about the barracks, and that the duty of sweeping these out and keeping them clean be committed, either to other servants, or else to men selected from each company, as is done in barracks, in England.

We should prefer this latter arrangement, as it will tend to keep the soldiers employed, and the work is in no way irksome or degrading.

7.—For the removal of the excreta and urine, we recommend that iron tubs furnished with handles be provided for each privy, into which the pans can be emptied as used. These tubs will be emptied once or twice a day into an iron tank conservancy cart, which will go round for the purpose, and which will convey the excreta to a "night soil depôt," situated at a distance of at least $\frac{1}{4}$ of a mile beyond the limits

* Tar is a good disinfecting and deodorising paint for this purpose and equally applicable to wood and iron.—Ed. *M. Q. J.*

of cantonments. There should be three of these carts for the troops in Garrison,—viz., one for the troops near the Cashmere Gate, one for those inside the Palace, and one for those stationed at Durriaogunge.

8.—As regards cook-house, we recommend that a dust-box of iron or wood be placed in each, into which all lees, refuse, and sweepings, should be thrown. Where, as is generally the case in Delhie, there is good under-ground drainage from the place, we would allow all dirty water to pass off through a sink (having an aperture of 1 inch only) connecting it with the sewers. Where, however, these latter do not exist, we would still retain the sink, placing under it an iron tub, similar to those described in the last para., which should be removed as fast as filled, and should be emptied into the tank cart when it comes round, like the contents of the box. Four of these iron tubs would, in this case, be probably required for each cook-house, in addition to the dust-box.

9.—As all these buildings are—however well they may be kept up—more or less nuisances, we are of opinion that their number should be kept to the minimum absolutely necessary to the comfort of the men.

This minimum we consider to be, cook-houses, one to every 100 men,
privies, do. ,, do. ,, and
urinaries do. ,, do. ,,

10.—The privies should be placed as near to the barracks, on the leeward side, as possible, not more—when practicable—than 100 yards. The receiving tubs being placed, 200 yards from any building, in a small enclosed space (or receptacle), which should have a low screen wall, 3 feet high, erected around it.

11.—The same remarks apply to the cook-houses, except only that the dust-boxes, &c., need not be removed from the vicinity of the building.

12.—The situation of the urinaries is one that requires great consideration. If too far from the barrack the men will not use them, but are sure to defile every corner they can find. The same is certain to happen at night, especially in the cold weather, when it is no light matter to turn out in scanty drapery for so light a purpose of nature.

13.—To carry out the dry system in its integrity, (and nothing less than this should, in our opinion, be attempted) it is absolutely necessary that a properly organized system of inspection should be set on foot and strictly adhered to. The details of such a system appear to us to be as follows :—

A. Every soldier or sepoy wilfully fouling a privy or urinal, or any place about the barracks, to be punished for so doing.

B. Breakages of pans to be made good by parties causing them, whether soldier or mehter, unless they are due to *bonâ fide* "fair wear and tear."

C. An Orderly to be appointed from each company, whose duty it shall be to inspect twice a day every privy, cook-house, receptacle, and urinal in use by the men of his company, reporting to his immediate commanding Officer the result of his inspection. The mehters attached

to each company will be under the orders of this Orderly, who will be responsible that they discharge their duties in an efficient manner.

D. The Officer commanding a company shall four times—at least—in every month, inspect the privies, cook-houses, receptacles, and urinals belonging to his men, noting the result in a report to be submitted to the Officer commanding the Regiment, who will be thus enabled to remedy promptly any evils that may arise.

E. The duty of the Regimental authorities should, we conceive, cease with the depositing of all excreta and offal in the receptacles within their lines. The removal of them thence to the night soil depots, should be effected under the authority of the Officer in charge of the station in conservancy; to assist whom, we recommend the appointment of a conservancy Sergeant, with fitting pay and allowances, whose duties would be to superintend the removal of all filth from the station, and supervise the establishment so employed, and who would be bound to visit, at least once every four days, every privy, cook-house, receptacle, and urinary attached to the barracks, and every public latrine, seraie, open ground liable to defilement, and encamping ground within the limits of cantonments. (Some one of these being of course, visited daily, so that in four days he will have seen them all at once.) The result of his inspections to be embodied in a report to be submitted to his superior Officer, who—after countersigning it—will lay it before the Brigadier Commanding the station, who will thus be kept fully acquainted with the sanitary condition of the cantonment.

14.—The sanitary report of the Quarter-Master of the week, and of the senior Medical Officer, will come in as useful checks on the general conservancy arrangements.

15.—In conclusion, we beg most strongly to recommend that the conservancy system now laid down be extended to the city and cantonment, throughout both of which public latrines with earthen-ware vessels, (and mehters attached), like those already described for the Native troops, should be erected in sufficient numbers, and at convenient places, for the Native population. The arrangements for the city must be made by the Civil authorities; to suggest those for the Military cantonment would seem to come within our province, and we beg, therefore, to recommend that 13 public latrines be erected, and kept up at the expence of the various cantonment funds, and that strict police regulations be enforced to make the natives use them; those who do not being punished accordingly. Each latrine should contain 30 pans with 6 iron receiving tubs and should have 2 mehters attached, who would be under the directions of the conservancy Serjeant.

16.—We recommend that the owner of every house occupied by Officers or other Europeans, shall be bound to provide a sufficiency of iron receiving vessels and dust-boxes into which the tenant may cause to be emptied all the execreta and offal accumulating in his compound. Iron tank carts should go round daily to collect and carry the contents of these away.

17.—For the public latrines and general conservancy of the station, we recommend that three tank carts be provided in addition to those allotted to the troops, or—what would be the better arrangement—

that six carts be allowed for the whole of the conservancy; the cantonment being divided into six districts or wards, having a cart allowed to each.

18.—The estimate of cost for establishments recommended is as follows:—

No.	Description.	Rate.	Proposed Establishment.	Establishment at present sanctioned by Govt.	Saving by new system.	Excess by new system.
	EUROPEAN TROOPS.		RS.	RS.	RS.	RS.
30	Mehters...	4-0	120	96		
	Lime for sanitary purposes			57		
			120	153	33	
	NATIVE TROOPS.					
8	Mehters	4-0	32	56	24	
	PUBLIC LATRINE.					
26	Mehters	4-0	104			
	GENERAL ARRANGEMENTS.	4-0	16	96		
4	Mehters attached to the soil depot.					
4	Labourers do. do. ...	3-12	15			
1	Conservancy Sergeant	20-0	20			
	Horse allowance for do.	15-0	15			
			170	96		74
	Total for the whole scheme....		322	305		
	Total excess of new system....					17

Note.—It will be seen that there is a positive saving so far as the troops are concerned. The excess is in the public arrangements, and can easily be met from the cantonment funds.

(Signed) C. PATERSON, *Lieut. Col. and President.*

(„) H. D. FOWLER, *Surgeon H. M. 82nd Regt.*

(„) C. CAMPBELL, *C. E. Executive Engineer.*

ORDERS OF THE MADRAS GOVERNMENT ON THE MORTUARY REPORTS FOR 1860.

Read the following letter from the Principal Inspector General, Medical Department.

No. 72 A.
159.

Office of Principal Inspector General,
MEDICAL DEPARTMENT,
BANGALORE, 27*th August*, 1862.

From ROBERT COLE, Esq., *Principal Inspector General, Medical Department;* to T. PYCROFT, Esq., *Chief Secretary to Government, Fort St. George.*

SIR,

IN forwarding for submission to Government I have the honor to commend the accompanying *Report on the Causes of Death in Madras* for the year 1860, to the most favorable consideration of His Excellency in Council, as a production of unusual interest and value.

2. Mr. Cornish makes some observations on the advances made towards a more correct mortuary registration, and urges with great force and truth the desirableness of establishing a Census of the Population, without which sanitary statistics are comparatively valueless, which I earnestly recommend should be carried into effect.

3. From a consideration of the registered deaths of the Presidency, the numbers of which may be considered now to have been arrived at with some approach to exactitude, and comparing them with the more certain statistics of the Madras Native Army, two elements of which, numbers and rate of mortality, are exactly known, Mr. Cornish ingeniously deduces what appears to be a much more accurate estimate of the population of the Town of Madras, than what it has hitherto been considered to amount to ; and 450,000, which the Municipal Commissioners also have calculated to be the amount, is considered to be a more probable number than the former mere guesses, which made it reach 700,000. This latter has been for very many years put down popularly as the number of the population; and it surely offers a strong argument for registration being effected that so large a discrepancy as 250,000 should exist in the estimate formerly trusted to, and the more accurate deductions now made as to the numbers of people inhabiting the second city of our Indian Empire. By the same negative species of induction Mr. Cornish calculates the general death-rate of the native population of Southern India at 22 or 23 per thousand per annum. All these are approximations, but their discussion usefully serves to pave the way to a more perfect knowledge; and, by exhibiting how

very far behind European countries we are, especially England, where there is a Public Officer to superintend, and an establishment ramifying all over the country, simple but effective, to carry out registration, a strong argument is adduced for extending to India the very beneficial and highly interesting inquiries, and I most respectfully urge the consideration thereof on His Excellency the Governor in Council.

4. The great bulk of Mr. Cornish's Report refers to the hygienic and sanitary condition of Madras, and the causes and sources of disease, and I cannot bestow too great praise upon his researches and observations; they are alike interesting to the practical physician and to the medical philosopher, and important to Government and to the Public. Nothing occurs to me to add thereto, and I concur generally in all his deductions and conclusions. I will only attempt to draw a practical corollary from the many interesting facts he has adduced, and the arguments he has grounded thereon.

5. Government are fully aware of the great need of measures being adopted to improve the sanitary condition of Madras. It has been the subject of anxious consideration year after year, and volumes have been written on different modes of cleansing the surface of the ground, of effecting a better drainage, and procuring a supply of water for drinking and ablution, and to flush the drains and sewers. There are Engineering difficulties which it is not my province to discuss, and financial obstacles, which I am not competent to judge of; but I may be pardoned for saying that the former, by British skill, may be surmounted, and that a money expenditure, whatever the amount may be, is not worthy of consideration, when put into the scale with the advantages to be obtained by the outlay.

6. It would be false reasoning to say that the rising generation will be no worse off than the present; that what has been submitted so long may well, under what seem the insuperable difficulties of procuring a proper drainage and water supply, be allowed to remain; for, that, though the evils are acknowledged to be great, the future population will be no worse off than the present; and that the consequences after all have not been so very bad on the public health; for, on the whole, Madras is so salubrious a place, the "philosophy of stinks" rather goes to prove that such offensive odours are even conducive to health. This *laissez faire* policy will not suit such an occasion. It will not be simply the *status quo* under which the next generation will suffer. Year by year, decade after decade, the evil grows and multiplies. The loathsome drains become continually more soaked and saturated, giving out ever increasing foul exhalations. The pollution of the whole soil, from the bad drainage and the inadequate scavengering, goes on at an ever-increasing ratio; and we may

look, as an inevitable consequence, for an increase of cholera and other zymotic diseases, at a rate proportionate to what we now actually see going on, with the constantly augmenting causes. The expression of a recent writer on Hygiene is not an hyberbole that, by a neglect of such measures, "an ultimate limit is set by the hand of man himself to dynasties, peoples, and nations." For, as he goes on to say, "the air we breathe, loaded with carbonaceous matter, sulphureous and sulphuric acid, sulphate of ammonia, and sulphuretted hydrogen, is deprived, by the absence of vegetation,* of the reviving principle oxygen, and is hence less fitted for the necessary changes of the blood effected during respiration."

7. A very great misfortune for Madras and its population is, that owing to the levels and the configuration of the land, the sea itself, from which we draw our supply of purifying air is polluted by the discharge of sewage into it; for, except into the Cooum river and Cochrane's canal, no other exit can be found for it. No one can pass along the beach from the north-east angle of the Fort to the Custom House without being painfully sensible of this. I have myself been sickened by the inhalation of the foul gases emanating therefrom, merely in passing by, and have felt a nausea and headache for several hours afterwards, with a sensible flavour in my mouth of the mephitic gases inspired—this latter effect being, doubtless, not simply an impression produced on the lining membrane of the fauces by immediate contact with the foul air, but from an intermixture with the very circulating blood itself of the pestiferous exhalations, received into the lungs by inspiration. Now these gases may not, and rarely do, perhaps, contain the germs of cholera; but if, to their nauseating influences are superadded the morbific atoms, occult and hitherto undetected, or that or other zymotic disease, I need not say how much more obnoxious their baneful effects to individuals who respire them must be. The great sewer, which debouches into the sea at the north east angle of the Fort, when the wind blows from that direction, poisons the surrounding atmosphere, on the contents being allowed to flow out during the night, which is the practice; and an Officer residing in the Fort informs me that, on this occurring, he is awoke from sleep, by the effect upon him of the foul exhalations.

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* This, in Madras, would apply only to Black Town; but that is the most densely and numerously populated quarter.

I recommended that tree-planting be carried out as much as possible on the esplanade around Black Town, both for the shade afforded, and to give an agreeable aspect, as well as for the revivifying effect on the atmosphere mentioned by the author quoted. If any vacant spaces can be found, or created, in the midst of Black Town, it would add greatly to the salubrity of the place to clear and plant them with timber trees. The "People's Park" to the west of the town will no doubt contribute greatly to this salubrious effect.

8. Whether it is that the sea-breeze exercises its influence on the filthy waters of the Cooum, as stated by Mr. Cornish, by the abundance of *ozone* which is known to exist in the air over the coast, thus actually decomposing and neutralizing its foul odors by chemical action; or whether, according to the simple popular notion, without resorting to chemistry for an explanation, the fresh wind dilutes and disperses the poisonous gases; it is essentially necessary that the breeze from the sea should reach the panting population in a pure state—But what is the case? From the Fort to Royapooram the wind, poisoned by the sewage flowing into the sea, blows back upon the inhabitants all the abominable gases in a concentrated form, which are incapable of neutralization by ten times the amount of *ozone* which may exist in the atmosphere. In any plan of sewerage, then, which may be adopted, it is absolutely essential in a sanitary point of view that there should be a main drain, at the lowest level a little way inland, for the Fort and Black Town, carried out north, as far as may be beyond Royapooram, debouching either into a back water, or into a reservoir, from which the contents might be conveyed and utilized as a manure. If the same could be done for the South of Madras, including Triplicane, Chintadrepettah, Royapettah, and St. Thomé, the sewer might then be carried into the sea, a little north of the embouchure of the Adyar, without being a nuisance to any of the inhabitants. Vepery and its neighbourhood might possibly—(I am speaking in ignorance of the exact levels)—be drained into the main sewer of Black Town, joining it to the north.

9. The Cooum, now a *cloaca maxima*, should have no drains terminate in it, and the above plan would preclude this. I earnestly plead, that this, heretofore most pertiferous body of water should have no impurities poured into it, and that endeavours should be made to keep it constantly full, by adoption of one of the several plans which are before Government. I most particularly urge this, for the sake of the General Hospital, the close proximity of which to its banks, is most prejudicial to its inmates; and I beg that Government will consider the large increase that will take place of the occupants of the institution, when the extensive additions now being made to the edifice are completed; on this subject, and on the means recommended for improving the banks of the gigantic cesspool called the Cooum, I beg to refer to my letter marginally noted.

No. 27, dated 10th February 1862, para. 4.

10. To flush the channels which are to convey the sewage to distant spots, along such a dead level as the plain of Madras presents, would require an enormous *vis a tergo*, and nothing but steam of considerable power would avail to effect it. I under-

stand a project to raise sea-water by steam engines has been laid before Government; and the engine lately used in the erection of the Pier has been proposed for employment for this purpose. This might well serve to scour out the drains now terminating in the sea, and, as a temporary measure, would be of great use; but much greater power, and an infinitely larger body ofwater, would be necessary to urge forward the sewage, should it be determined to convey it northward instead of into the sea. Whether water is to be procured from the sea in this manner, or whether, by the grand project of Sir A. Cotton and Captain O'Connell, fresh water, stored by embankment of the Adyar and its feeders, is collected to provide Madras for all other purposes, as well as to flush the drains, I abstain from discussing as beyond my province and competence to determine. The great importance to the inhabitants of Madras of effecting the object by some method or other, I beg most earnestly to impress upon the notice of Government. I am perfectly aware that the abstract truth of the question is fully admitted, and that it is in fact a work of supererogation to urge upon Government the adoption of measures, the necessity of which is acknowledged; but their adoption prevented or deferred by engineering and financial difficulties; but in presenting for the consideration of His Excellency the Governor in Council the present Report, showing the gradual increase of disease in Madras, and the continually augmenting sources thereof, I considered it incumbent on me to represent the necessity of taking steps to obviate what are indeed remediable causes of so much evil.

11. A plan for a more efficient system of scavengering, I have before submitted to Government,* and without some such means the pollution of the vast area over which the population of Madras is scattered must go on ever increasing. The foulest contributions to the scavangers' carts are the deposits from the dwellings in Black Town, Triplicane, &c., which are discharged into the open side-drains of the streets. These are indeed cesspools, for nothing but a torrent of rain (so rarely occurring at Madras) ever cleanses them thoroughly, and the porous absorbent brick and chunam of which they are built, are sodden and saturated with the noisome matters allowed to flow into them, from the blackened gutters observed to pass out from every dwelling. Indeed these road-side cesspools are used as *cloacæ* by the inhabitants, especially the juvenile portion, as may be seen, to the disgust of the beholder in passing through the main thoroughfares which Europeans are in the habit of traversing. How much more must the practice prevail in the byestreets! Cholera may now be considered as permanently *endemic* in Madras; and if, as is now believed, and as Mr. Cornish so forcibly

* No. 150, dated 26th Sept. 1861, and Pros. of the Madras Govt., Public Dept. No. 1,481, of the 1st Nov. 1861.

represents, the germs of that dire disease are perpetuated and multiplied by the discharges from patients, which, under the circumstances I have stated, must every where infect the immediate neighbourhood of every human habitation, how can it be otherwise than that the pest will remain perpetually amongst us! It is within my recollection that the present deep masonry drains did not exist by the road side, and the evil decidedly was not so great as it is now. Then there was to each dwelling its own small offensive pool, which spread out, exposed fully to sun and atmosphere, and the fluid portion was evaporated and the solid matters were palpable, and swept up and carried away by the scavengers; but now, deep caverns exist, under the name of drains, which are indeed, as I have said, veritable cesspools, incapable of being thoroughly cleansed, in which the foulest matters lodge and fester and putrify. I would strongly recommend that the present drains be taken up, and others laid, built of slabs of the foliaceous granite rock abundant near Madras, and "saucer" shaped, as I believe the Engineer's technical name is, that is, shallow and concave, wherein nothing can remain out of sight.

I have the honor to be, Sir,
Your most obedient servant,
(Signed) ROBERT COLE,
Principal Inspector General,
Medical Department.

ORDER THEREON, 31st October 1862, No. 1,287.

With this letter, the Principal Inspector General, Medical Department, submits, with his own remarks upon it, a Report on the causes of death in Madras for the year 1860.

2. This Report is ably drawn up, but the late date at which it is submitted must detract from its utility. There are, however, in it some points which deserve special notice, and these the Government will now proceed to consider.

3. The population of the Town of Madras has for many years been supposed to exceed 700,000, but recent inquiries on the part of the Municipal Commissioners have, it is stated, made it doubtful whether the number is as much as 450,000. Assuming this as the more correct estimate, the actual number of deaths registered in the year 1860, viz., 13,498, is at the rate of 30 per thousand, whereas the general average of the six years 1854 to 1860 was 24 per thousand, which, allowing for more imperfect registration in previous years, still tends to show that 1860 was an unhealthy year.

Report para. 4.

4. This must, however, be regarded only as a loose approximation in the absence of a reliable census, and the Municipal

Commissioners will be asked to state what steps are being taken by them for obtaining a correct census of the population within their range.

5. From the table entered in para. 13 of the Report it appears that, of the five principal diseases there described, Cholera and Fevers were the chief causes of mortality ; the former attaining its maximum during the third quarter, and its greatest intensity in the first month of that quarter, when it destroyed, according to the register, 1,218 persons ; the latter, its greatest height in January, November and December, and that simultaneously with the decline of mortality from Cholera in the last quarter of the year, there was an increase in the number of deaths by Fevers, Diarrhœa and Dysentery.

6. To the small quantity of rain which fell during the months of June, July, August and September, and the general prevalence of land winds for the greater portion of the time, is apparently to be ascribed the unhealthiness of Madras during this period.

7. The Report further shows that the months of April, May and June, during which the southerly and easterly winds prevail, have been usually found to be the healthiest season in Madras.

8. On the questions of drainage and water supply, to which the Principal Inspector General adverts, for the Town of Madras, the Government expressed themselves fully in their Proceedings of the 20th December last, No. 1,677, a copy of those Proceedings will now be sent to Mr. Cole. Reference will be made to the Department Public Works to ascertain what measures have been there taken on these questions. Nothing effectual can, however, be done until funds be provided. Application for an annual grant to the extent of a lac of Rupees was made to the Government of India, under date the 19th March last, but no reply has yet been received from that Government.

9. On the subjects treated in paras. 9 and 11 of Mr. Cole's letter, Orders were passed in the Proceedings of Government noted in the margin. The suggestion, however, at the close of that letter seems good, and the attention of the Municipal Commissioners will be called to it.

Dated 28th February and 8th March 1862, Nos. 272 and 305.

10. Mr. Cole's recommendation, contained in a note at foot of para. 6 of his letter in favor of planting trees in and about the Black Town, will also be referred to the Commissioners for their consideration.

(True Extract).

(Signed) A. J. ARBUTHNOT,

Chief Secretary.

MEMORIAL TO BOMBAY GOVERNMENT AGAINST MEDICAL PRACTITIONERS WITHOUT DEGREES.

Dr. H. Miller, with a letter dated the 3rd instant, forwarded to Government the subjoined memorial against some persons following the practice and profession of medicine in Bombay :—

To His Excellency Sir H. B. E. FRERE, K.C.B.,
Governor and President in Council, Bombay.

The memorial of the undersigned qualified medical practitioners of Bombay.

May it please your Excellency,—We, the undersigned qualified medical practitioners of Bombay, beg to bring to the notice of your Excellency in Council as follows :—

1. That your memorialists have received their medical education and training in recognised institutions of the United Kingdom at considerable expenditure both of time and money, and have been authorized to practice in medicine and surgery by regular degrees or diplomas, declaring their qualifications therein.

2. That some of your memorialists have practiced for several years in this island, and others of them only a short time ; but they all fully expect and believe that your Excellency in Council will consider their professional rights and privileges worthy of the consideration and protection of your Hon'ble Board.

3. That your memorialists complain that certain unauthorized persons, to wit apothecaries, assistant apothecaries, stewards of the Government hospitals, and others, hold themselves forth to the public as medical practitioners, and undertake cases in medicine, surgery, and midwifery, in which branches of professional knowledge they have neither received any proper or recognised education nor obtained any credentials of fitness to practice.

4. That such usurpation of professional functions on their part is an infringement of your memorialists' legal rights and privileges, and an imposition on the humbler classes of the unprofessional public, who can scarcely be expected to know the difference between regularly qualified medical practitioners and unqualified persons when the credentials of the former are not vouched for in any public way, and when many of the latter take advantage of their position as Government servants to recommend themselves for employment.

5. That your memorialists are informed and believe that the said Government servants, by so entering into medical practice (even independent of the question of qualification,) violate a regulation of Government made in that behalf, by which such persons are prohibited from engaging in trade or other lucrative employment, inasmuch as they are expected to devote their whole time and energies to the duties of their respective appointments, which are sufficiently onerous and important to require their undivided attention.

6. That your memorialists refer by way of instance to the case of the Resident Apothecary of the Jamsetjee Jejeebhoy Hospital,

who is at present, and has been for some years, engaged in medical practice in all its branches ; and to that of the late Resident Apothecary of the European General Hospital, who has lately retired and set up as a private practitioner.

7. That your memorialists further complain that many other unqualified persons, besides members of the class alluded to have unauthorizedly engaged in medical practice in Bombay : and your memorialists will instance the case of ex-students of the Grant Medical College who have failed to obtain the diploma of that institution.

8. That your memorialists recognise in the qualified students of the Grant Medical College a class of persons equally entitled with themselves to the protection of Government in respect to their professional rights and privileges, though their title thereto is a boon which they own to the benevolent policy of Government, in providing for the benefit of the natives of the country qualified persons of their own race and religion to minister to them in disease.

9. That your memorialists would submit with great respect that it would be highly expedient that persons requiring medical aid should be enabled to distinguish qualified from unqualified practitioners, and with a view thereto to regulate the practice of medicine in this country by some Act of the Legislature (whether local or imperial your memorialists will leave it for the consideration of your Hon'ble Council ;) and thereby to prevent the violation and infringement of the rights and privileges of qualified practitioners by unqualified and uneducated persons.

10. That an Act called " The Medical Act," being Vict. c. 90, was passed in England in the year 1858, and a subsequent Act to amend the said Act in the year following; and that by these Acts the practice of medicine and surgery, and the qualifications of practitioners therein, are now regulated in the United Kingdom.

11. That by the said Acts certain privileges are secured for legally qualified medical practitioners, registered under the provisions therein contained; and that no person is entitled to recover any charge in any court of law for any medical or surgical advice or attendance or the performance of any operation or for any medicine prescribed and supplied, unless he shall prove at the trial, that he is registered under the said Acts.

12. That by the said Medical Act sections 36 and 37, it is provided that " no person shall hold any appointment as a physician, surgeon, or other medical officer, either in the Military or Naval Service, or in emigrant or other vessels, or in any hospital, infirmary, dispensary, or lying-in-hospital (not supported wholly by voluntary contribution,) or to any friendly or other Society, or as a medical officer of Health, unless he be registered under this Act ;" and that " no certificate required by any Act now in force, or that may hereafter be passed from any physician, surgeon, Licentiate in Medicine or Surgery, or other medical practitioner shall be valid unless the person signing the same be registered under this Act."

Your memorialists, therefore, pray for such relief in the premises as to your Excellency in Council may seem meet and proper. And your memorialists, as in duty bound, shall ever pray.

HUGH MILLER, M.D., *Surgeon, Fellow F. Ph. S., Glasgow.*
JOHN SOMERVILLE, M.D., Edinburgh, M.R.C.S.E.
THOMAS DIVER, M.D.
HARTWIG L. SEITZ, M.R.C.C., London & England.
JAMES N. McDOUGALL, M.D., Edinburgh, M.R.C.S.E.

REPORT BY THE PRINCIPAL INSPECTOR GENERAL.

Certain private Medical practitioners in Bombay who have obtained degrees or diplomas to practice in medicine and surgery from legally recognised institutions in the United Kingdom, complain that unqualified and uneducated persons, such as apothecaries and assistant apothecaries, now or recently in the service of Government, and ex-students of the Grant Medical College who have failed to obtain the diploma thereof, are unauthorisedly engaged on private practice in Bombay.

2. They represent that the usurpation of professional functions on the part of such persons is an infringement on their legal rights and privileges, and they pray that some Act may be passed corresponding to the Medical Act which was passed in England in 1858, and to the subsequent Act passed in the following year.

3. These gentlemen have thus arrived at the conclusion that what was found necessary to regulate medical matters in Great Britain, is equally so in India. I confess I am unable to see this. The state of matters in the two countries is so wholly different that no parallel can be drawn.

4. I have not a copy of the Act at hand, but I believe that among the more important objects kept in view in framing it, was that of enabling the public to know who were legally qualified practitioners to be appointed to the thousands of charitable institutions in Great Britain. No such object exists in this country, as Government command the services of their own commissioned medical officers, as well as of the majority of the graduates of the Grant Medical College.

5. Another of the objects was to enable legally qualified practitioners to recover charges in courts of law. An Act for this purpose can scarcely be necessary in Bombay where custom, I believe, if not law, already enables such practitioners to do so. At all events no such want has been expressed by the graduates of the Grant Medical College, who, equally with the gentlemen in question, are legally qualified practitioners.

6. My own opinion is that no such Act is required. The community, European and Native, may, I think, safely be left here as elsewhere to exercise their own judgment in all matters connected with the selection of medical attendants. People of all classes are usually quite alive to their own interests in such matters.

7. The Medical Act of 1858 met with great opposition even though it involved the interests of the public as well as of many thousands of practitioners. In Bombay it seems to me, that the interests of the community are scarcely concerned, while the number of European private practitioners is almost limited to the five gentlemen in question.

8. As these gentlemen specially allude, in para. 6, to the apothecary of Jamestjee Jejeebhoy Hospital and to the apothecary recently attached to the European General Hospital, as illustrations of the correctness of their complaint, I feel bound to state that, as far as these warrant officers are concerned, there is a misapprehension in regarding them as uneducated and unqualified for practice.

9. It is true they have not received the diploma of the Grant Medical College, because the regulations of the Service do not require it, but they both passed through a regular course of study within its walls during three successive sessions, and after a rigid examination by the Principal and Professors they were pronounced "qualified" to act in professional emergencies.

10. As far as the remarks of the memorialists bore upon Mr. Anderson, the apothecary of the Jamsetjee Jejeebhoy Hospital, I thought it right to obtain the opinion of Dr. Peet, the Surgeon of the Hospital, and I beg to annex that officer's reply dated the 7th instant, merely observing that I entirely agree with every remark therein made.

11. As Mr. Blaney, the other apothecary alluded to, has recently been pensioned and has consequently no immediate superior to represent circumstances as far as he is concerned, I feel bound, in justice to that most deserving warrant officer, to state that he served under me for many years as chief apothecary in the European General Hospital, an institution which affords the largest field in this presidency for the observation and study of disease as affecting Europeans.

12. During the whole of that time Mr. Blaney availed himself with extraordinary diligence of every opportunity of improving his professional knowledge, and eventually became so able a practitioner that I should be perfectly content to put myself in his hands, if I required medical attendance. In justice to Mr. Blaney, I beg to annex a letter received from him on the 8th instant, because it gives a detail of the nature and extent of his medical education. By what means he heard of the memorial I know not, but certainly not from my office.

13. Instead of endeavouring to depress men of the stamp of Mr. Anderson and Mr. Blaney, I confess it is to me a source of sincere satisfaction to find that the knowledge acquired by long years of study and observation is made available for the benefit of the community as well as for the personal advantage of themselves; and I would venture to express a hope that such may be the feeling of Government.

14. I would request the favor of the letters from Dr. Peet and Mr. Blaney being returned when no longer required.

I have, &c.,
M. STOVEL,
Principal Inspector General,
Medical Department.

10*th October*, 1862.

To HUGH MILLER, Esq., M.D.

SIR,—I am directed by His Excellency the Governor in Council to acknowledge the receipt of your letter dated the 3rd instant, forwarding a memorial from yourself and other Medical Practitioners of Bombay.

2. In reply, I am desired to observe, that had you grounded your case on any injury to the public arising from the practice of Medicine and Surgery by uneducated or unskilful persons, you would at least have shown cause for enquiry. But you indicate, as the object of your Memorial, the exclusion from private practice of men who, to much training in the way of regular Medical education, have added long and approved practical training in the public Hospitals, high official and professional character during prolonged service, and a large measure of public confidence, as shown by the alleged extent of their non-official practice.

3. A prohibition to such men to practice, in such a community as that of Bombay, could not, in the opinion of the Governor in Council, be defended in the interests of the public, or of humanity to the poor and ignorant, and I am, therefore, desired to inform you that your Memorial cannot, for the reasons above set forth, be entertained. I have, &c.,

A. D. ROBERTSON,
Acting Chief Secy. to Govt.

BOMBAY CASTLE, 25*th October*, 1862.

TO THE PRINCIPAL INSPECTOR GENERAL MEDICAL DEPARTMENT.

SIR,—With reference to your report, No. 2,441, dated 10th instant, on a memorial from certain medical practitioners in Bombay against unqualified persons following the practice and profession of medicine, I am directed to inform you that His Excellency the Governor in Council entirely agrees with you.

2. Copy of my reply of this date, No. 1,697, to the memorialists, is herewith forwarded for your information.

3. The enclosures to your report are herewith returned, as requested. I have, &c.

A. D. ROBERTSON,
Acting Chief Secy. to Govt.

BOMBAY CASTLE, 25*th October*, 1862.

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PART I.

ORIGINAL ESSAYS.

ART. IX.—*Contraction, or Rigidity, of Muscles in Paralysis.* By Native Surgeon MOODEEN SHERIFF, Triplicane Dispensary, Madras.

SPEAKING generally, there is no symptom in palsy, next to the loss of voluntary motion, so characteristic and frequent as the relaxation of the affected muscles, hence the more scientific term of the disease, *paralysis*. Yet, it is curious to observe that the relaxation of muscles is sometimes not only absent altogether in paralysis, but is substituted by a quite opposite condition, *contraction*.

This contraction, again (although less frequently met with in palsy than the relaxation and some other symptoms), when present, is often so strongly marked, that it becomes the most prominent of all. It will be seen, from the cases given elsewhere in connection with some other points on this subject, that in some cases the whole arm is powerfully contracted and carried behind so as to be placed permanently across the back ; in others the hand is firmly clenched and bent on the forearm, and the forearm flexed on the arm, while the latter is raised and kept almost at a right

angle with the corresponding side. The leg, too, in some instances is very strongly contracted and causes the heel to be kept always in contact with the thigh. In short, the deformity of the paralytic limbs is sometimes so great, that it would hardly be conceived as the result of palsy by those that might not have an opportunity of witnessing such phenomenon in that disease. Therefore, a few practical observations on this symptom in connection with paralysis may not be, I hope, quite uninteresting to the profession.

There is no want of cases on record in which the contraction or rigidity of muscles was distinctly present with paralysis, but the intimate relation it bears with the latter was not sufficiently appreciated or dwelt upon by any author until within the last nine or ten years. Among the few authors that have recognised it, or made a casual mention of it in their works before that period, (not including the French writers) are Drs. Copland and Tweedie: the former author, while speaking of diagnosis of different kinds of spasms, remarks—"Various paralysed parts may present states which may be mistaken for spasmodic affections; and the paralysed state may rapidly pass into the spasmodic, and this latter into the former, which is much the most common. The existence, the morbid relations and the transitions of both these morbid conditions thus become extremely important."* And the latter observes thus—"There is often more or less rigidity of the muscles in paralysed limbs, and the joints are usually in a state of flexion. Sometimes they can be readily extended, but it is often necessary to overcome more or less resistance in doing this."†

As far as my knowledge extends, the late Dr. Todd is the first author that has described this symptom directly in connection with paralysis in his admirable "Clinical Lectures," published in the year 1854. He divides the cases of cerebral paralysis into three classes according to the state of the muscles of the paralysed limbs; the first of these classes is referable to cases with relaxation of muscles, and the second and third to those with rigidity or contraction.

"In the second class," says this author, "I place those cases in which the paralyzed muscles exhibit a certain amount of rigidity,

* Copland's Dictionary of Practical Medicine. Vol. III, page 847.

† Dr. Tweedie's Library of Medicine, Vol. II, page 275.

which rigidity has existed from the moment of, or soon after, the attack. This rigidity varies in degree from an increased plumpness of the biceps of the arm and the hamstring muscles in the thigh, and a resistance on the part of these muscles to extension of the forearm or leg, up to a contraction almost tetanic. The nutrition of the muscles in cases of this class is not materially weakened at first, and the wasting is consequently either *nil*, or to a very trifling extent. If, however, the palsy persist, the muscles waste, although not so fast as in the first class of cases.

"In the third class, we find cases with rigid muscles likewise. In these cases the rigidity is a late phenomenon. It does not occur for some time after the paralytic seizure. The cases of the first class often pass into this. The wasted and relaxed muscles after some time gradually acquire more or less of tension; they become shortened and appear like tight cords stretched between their origin and insertion. The tension is most manifest in the flexor muscles, and the limbs assume the state of more or less flexion, especially the upper extremity. The forearm becomes strongly contracted on the arm, and the fingers flexed into the palm of the hand, which is liable to be irritated by the growth of the nails."*

Dr. Todd is more or less followed in his opinion by all those that have lately written on paralysis, and Drs. Watson and Thomas, who formerly entertained a quite different view of this symptom, have also adopted his opinion, and described it in connection with paralysis in the latest editions of their works.†

Besides these circumstances, which have reference only to the history or frequency of this symptom in paralysis, I shall now proceed to relate a few others with regard to its origin, which will show how still more is it connected in its pathology with some of the varieties of that disease. These varieties are *cerebral*, *spinal*, and *reflex* paralysis.

At one time it was held by the profession on the authority of some French pathologists that the rigidity or contraction of muscles was the most reliable criterion of *ramollissement* or softening of the brain, but the accuracy of this statement has been rendered very disputable by subsequent researches into the morbid anatomy of the nervous

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* Dr. Todd's Clinical Lectures on Paralysis, &c., page 174.

† See the fourth edition of Dr. Watson's "Lectures on the Principles and Practice of Physic." Vol. I, page 504; and the eleventh edition of Dr. Thomas' "Modern Practice of Physic." Vol. I, page 546.

centres. There are many writers, Dr. Carswell among others, who still maintain this view, but with this modification that it is the inflammatory softening of the brain in which this contraction of muscles is most constantly met with. Dr. Abercrombie, however, was the first British author who objected to this opinion, and showed that the ramollissement of the cerebral substance is not characterized by any uniformity of symptoms; that there is no foundation to state that it is distinguished by tonic contraction of muscles; and that "It is also met with in connection with affections of the membranes, without any disease of the cerebral substance; and with encysted abscess; and it is frequently observed in cases of typhus, where there is much cerebral disturbance, but which terminate favourably."* Dr. Graves and some others are nearly of the same opinion as Dr. Abercrombie, and produce instances in support of their argument. For example, Dr. Graves cites a case of hemiplegia with well marked contraction of muscles, in which there was nothing to account for it on dissection except a slight congestion of the brain.†

On the authority of Dr. Todd, who has bestowed great attention on this subject, there are two kinds of muscular rigidity or contraction: one is the *early* and the other the *late* rigidity of the paralysed muscles; and the organic lesion or rather the *irritative paralyzing lesion* as Dr. Todd calls it sometimes, which is necessary to produce them, is different in each case.

The early rigidity indicates irritative disease within the cranium; if it is slight and confined only to one or two muscles, it is generally dependent on a clot lacerating the brain, and this is frequently preceded by a white softening; and if, on the other hand, the rigidity is very extensive and great, it is owing to a greater irritative lesion of the brain or of its membranes, which is often inflammatory.

In the late rigidity, the manner in which the contraction of muscles is produced, is this: "At the seat of the original lesion, whether it be simply a white softening, or an apoplectic clot, or a red softening, with more or less destruction of the brain-substance, there takes place an attempt at cicatrization, more or less perfect. Attendant

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* Dr. Abercrombie's Pathological and Practical Researches on Diseases of the Brain and Spinal Cord, second edition, p. 115.

† Dr. Graves' Clinical Lectures on the Practice of Medicine, p. 522.

on this, there is gradual shrinking or contraction of the cerebral matter, which, acting on the neighbouring healthy tissue, keeps up a slow and lingering irritation, which is propagated to the muscles and excites in them a corresponding gradual contraction, while at the same time their nutrition becomes seriously impaired by the want of proper exercise, and the general depressing influence of the lesion."

The following paragraph completes the views of Dr. Todd on all important points connected with contraction or rigidity of muscles in paralysis.

"Let me point out to you, that it is not an inflammatory state of brain only, which may excite this rigid palsy, but one of irritation, whether inflammatory or non-inflammatory. By an irritated state I mean, one of exalted polarity of the nervous tissue, or as the physical philosophers would say, a state of high tension. Inflammation may exercise as depressing an influence as atrophy; in other words, it may as effectually destroy the conducting power of the nerve fibres or the generating power of the vesicular structure, as if the elements of those two kinds of nerve-matter were wasted or ruptured. And as Lallemand has remarked, an early stage of the inflammatory process may be irritative and paralyzing; a later stage paralyzing simply. You may fairly ask, is a paralyzing lesion compatible with an irritative one? To this I think an affirmative answer may be readily given. A state of irritation interferes with the due conducting power of the nervous fibres, and with their prompt obedience to the influence of the will. The physical nervous action refuses either wholly or in part to obey the mental influence which usually controls and directs it; the disturbed nutrition of the nervous matter prevents the ready development of those physical changes in the nerve cells and nerve fibres, without which the will cannot be freely obeyed. Moreover, in many cases, the lesion consists at once of ruptured fibre and compressed brain substance." (p. 231.)

Besides giving many examples from his own experience, Dr. Todd alludes to several cases of Lallemand and others in proof of his doctrines; and he also makes an allusion to a very interesting case of Roston in which the rigidity of the paralysed muscles was due to an exostosis compressing the cerebellum so as to form a deep hollow on its surface.

Now, taking into consideration all the facts which I have thus briefly brought forward to bear upon this subject, I feel justified to come to the following conclusions.

1. That contraction or rigidity of muscles is of frequent occurrence in paralysis, and it is sometimes very great and peculiar.

2. That there exists a close morbid relation between this symptom and paralysis, so much so, that they may both depend sometimes on the same proximate cause, or the *irritative paralyzing lesion* of the brain.

3. That this contraction is capable of being produced by almost every organic lesion that the brain and its membranes are subject to, but it is not so always or generally, because it is not the lesion that gives rise to it, but the *irritation* of the brain which results from the lesion; and this irritation is neither necessarily present in every lesion, nor in any lesion at all times.

4. That of all the lesions of the brain, the inflammatory and congestive processes are very irritative, and of these, again, the red softening, the existence of clots of blood in the healthy or partly diseased cerebral substance, and the process of cicatrization in any part of the brain are greatly so, and are therefore frequently characterized by muscular contraction.

5. That a mechanical pressure of the brain from tumors or effusion of blood, &c., is occasionally known to produce this symptom, and so is also the inflammation or congestion of the membranes of that organ.

6. That although the white or non-inflammatory softening of the brain does not produce any irritation, there is no doubt that it is often accompanied with muscular contraction; when it is so, the symptom is generally the result of irritation set up by induration, effusion, or clots of blood in the surrounding healthy tissue.

7. That this contraction may develop itself simultaneously with, or soon after the paralytic seizure, or it may occur during the middle or latter course of the disease.

8. That when it manifests itself early, it indicates the presence of an irritative or inflammatory disease within the cranium; and its late occurrence is an indication of the process of cicatrization in some part of the brain.

9. That this *paralytic* contraction (if I be allowed to call it so) seems to differ from all other morbid contractions of muscles, chiefly by its being confined to the paralysed muscles, and by its greater duration or permanency.

10. That from the 3rd and 6th conclusions we see we are able to account satisfactorily for the great diversity of opinion that had once existed as to the occurrence of this

symptom in certain lesions of the brain among many authors, who were all correct in their observations as far as the facts of their cases are concerned, but the difference was merely in their explanation.

All that I have said about this symptom in connection with cerebral paralysis, is equally applicable to the spinal variety of that disease, with the exception of this, that contraction or rigidity of muscles is of more frequent occurrence, but generally less intensely marked, in the latter than in the former. In confirmation of this statement I need only quote the following paragraph from one of Dr. Brown-Séquard's "Lectures on Paraplegia, &c.," recently published in the "Lancet."

"1*st. Cramps, Twitchings, and other Convulsions.*—The signification of tonic and clonic convulsions in paralysed muscles, in cases of paraplegia, is quite evident: they are incontestable results of an irritation of either the anterior roots of the spinal nerves, the spinal cord, or the sensitive nerves in any part of their length, through a reflex action. In cases of myelitis it is chiefly under the form of cramps that convulsions occur, the frequency of these spasms is one of the characteristics of this affection. In cases of tumours pressing upon the spinal cord, especially upon its posterior surface, cramps are not so frequent as twitchings or a general spasm producing a drawing up of the lower limbs, which sometimes remain permanently in a state of spasmodic flexion. In cases of chronic meningitis or congestion of the spinal cord on its membranes, twitchings are more frequent than cramps. In cases of reflex paraplegia, the external irritation that produces the paralysis sometimes produces also spasmodic movements by a reflex action. Especially in those cases where the rectum or the urethra are the parts from which starts the irritation, there is what the patient calls a *catchiness* or a drawing up of the legs. In cases of hæmorrhage in the spinal canal, tetanic convulsions are frequently observed. Rigid spasms of the muscles of the back are amongst the most prominent symptoms of spinal meningitis. Amongst the affections of the spinal cord that produce paraplegia, one of the most frequent—the non-inflammatory or white softening—is characterized by a total absence of cramps, twitchings, or other convulsions.

"On the whole, some form of morbid contractions exists constantly in myelitis or spinal meningitis, and frequently in cases of congestion of the spinal cord or its membranes, or of tumours or other cause of pressure upon the spinal cord, and also, sometimes (by a reflex action), in cases of reflex paraplegia. On the other hand, a complete absence of morbid contractions will be observed in all

cases of non-inflammatory softening, and in the majority of cases of reflex paraplegia."*

It remains now for me to prove the pathological relation of the paralytic contraction or rigidity of muscles with reflex paralysis, which is one of the chief objects of this paper. It is this form of paralysis in which we could more properly call this condition of muscles a symptom, because the palsy depending upon organic lesions of the brain or spinal cord, is a symptom itself. Thus Dr. Todd tells us not to "look upon paralysis as a disease of itself: it is not a disease, but a symptom of a disease." This is exactly applicable to the cerebral, spinal, and some other varieties of paralysis, but, when the palsy is the result of a reflex action from an irritation of a centripetal nerve, without any structural alteration of any part of the nervous system, it is, I presume, a disease of itself in the same manner and on the same principles as are hydrophobia, traumatic tetanus, &c. Any phenomena, then, that may generally or occasionally accompany a reflex paralysis, are correctly its symptoms.

It is not my intention to enter into any discussion on the correctness or otherwise of the grounds on which the theory of reflex action as a source of paralysis rests, it suffices for my purpose to say that it is not necessary to insist upon this mode of origin for the production of that disease; for, it has been long recognised by Dr. Graves, Mr. Stanley, and Dr. Stokes, &c., and within the last few years, it is so ably supported by Dr. Brown-Séquard that no reasonable doubt could now be entertained of its existence. Among the numerous instances of paralysis that have fallen under my observation, no doubt there were many of reflex origin, but I must confess I did not regard them as such until the publication of the recent and valuable researches of Dr. Brown-Séquard in nervous pathology. During the last few years, however, I have taken notes of every case of paralytic affection which appeared to me to owe its origin to a reflex action; they are four in number (including the one, which occurred to me before I paid attention to this subject, and which I did not think to be a case of reflex palsy at the time of its occurrence,) and in all these the paralytic contraction or rigidity was very well marked. Therefore, according to my own experience, the symptom in question is also frequently met with in reflex paralysis. But, before

* Lancet, November 10, 1860, p. 451.

I detail these cases I may remark that, considering physiologically, and knowing that the paralysed muscles often continue to be influenced by a reflex action, and that a paralyzing lesion is compatible with an irritative one, there is no reason why the contraction or rigidity should not occur in palsy resulting from an irritation of a part of the nervous system out of the cranium and spinal canal, in the same way as it does sometimes from an irritative paralyzing lesion of such small portions of the brain, which give no origin to any motor nerves, and which from their limited extent could not be expected to produce pressure on any other part of the encephalon. It will be observed from the following quotation from Dr. Brown-Séquard's "Lectures," as well from the one already quoted in reference to spinal paralysis, that he not only admits the occasional existence of some morbid muscular contraction in reflex paraplegia, but also thinks that there is a great probability that a rigid or contractured state of paralysed muscles in cases of inflammation of the surface of the cerebrum, is also due to a reflex action.

While speaking of the contracture and rigidity of muscles as symptoms of disease of the brain, he says,

"These symptoms are so well known as being sometimes the effects of a reflex action (caused by worms, teething, &c.,) that I have not to insist on that mode of their origin. I wish now only to say that if we admit that in cases of inflammation in a small part of the cerebral lobes, especially in their upper portion, a rigid or contractured state of paralysed muscles (a pretty constant symptom then) is due to the fact that the motor nerves of these muscles are irritated in the inflamed part, we would have to admit also this absurd, or at least impossible, view that the various motor nerves of the muscles of the limbs go up to each of the different parts of the cerebral lobes. We must admit that in those cases the rigidity or contracture is produced through some peculiar influence, exerted by the inflamed nerve-fibres in the cerebrum, upon some parts of the base of the brain. Is that peculiar influence a reflex influence? I cannot prove that it is; but I think the probability is great that there is then the same process that exists when contraction is due to a reflex action from the bowels, the gums, &c."*

One of the cases mentioned above, came under my treatment only a few months ago, 10th June 1862, when a child, "Mooneeyan," was brought to Triplicane Dispensary with the following history and symptoms.

* Lancet, July 27, 1861, page 80.

The patient was said to have been perfectly able to play about until the 4th day previous to his admission, on the evening of which day he was observed to fall down frequently while walking as if there was some weakness in his right leg; and in two days more he became quite unable to stand up. On examining the child, the extremities on the right side were perfectly motionless, with a distinct rigidity of the whole arm, particularly the fingers and wrist.

Inquiring minutely into the cause of the disease I was able to find out that the child had passed some lumbrici in his stools a few days before his sickness, and I gave him therefore for four days two grains of Santonine morning and evening, and on the 5th a dose of castor oil with turpentine. The medicines expelled some round worms with apparent benefit to the patient.

On the 15th June, the child was seen by Dr. Porteous, and by his order I increased the dose of Santonine to four grains, and gave occasionally the same medicine mixed with castor oil.

On the 22nd the report is, "the child passed more worms daily for the last several days, and the abatement of symptoms appears to be strictly in proportion to their increase. He is able now to move about his arm and leg, and to stand up with the support of his mother's leg. There is still some rigidity in the fingers, but none in the wrist and arm."

The medicine was continued with occasional intervals of a few days till the patient ceased to pass any worm, and was discharged cured on the 21st July 1862.

The subject of the 2nd case was a boy named "Ghoolam Mohdeen," about 15 years of age, who was brought to me from Amboor, a village near Venumbody. He was admitted as an out-door patient of Triplicane Dispensary on the 13th June 1860. In this case the whole left side, including the face, was affected, but the loss of motion was not complete, as the patient was able to walk about limping to some distance, and had a slight control over the arm. The forearm, with its wrist and fingers contracted, was strongly flexed upon the arm, and the latter was raised on the side almost to the level of the shoulder, and was constantly in convulsive motion. The rigidity and convulsive movements

of the arm were much augmented when an attempt was made to extend the forearm upon it, and there was also occasional twitchings of the facial muscles on the affected side.

The history of this case is, that a partial inability to move about his left arm and leg was noticed one morning suddenly after sleeping out in the cold air about a year before he was brought to me. The contraction made its appearance some time after the attack, and was slight at the beginning, but became very severe gradually. There was no symptom of any organic disease of the viscera in the cranial and spinal cavities; nor was there any pain or other signs of rheumatism in any part of the body.

As cholera broke out severely in Madras in the following month (July 1860,) the boy was taken away to his village by his friends, unbenefited by the remedies employed during his short stay under my care. By order of Dr. Porteous a long splint was applied to the arm with starch bandages, which was retained for about a fortnight, but when it was removed the limb assumed the abnormal position almost instantly. Although there was no indication for any counteriritation, but as a last trial I applied a seton to his neck a few days before he left Madras, but it aggravated the symptoms so much that its immediate removal was necessary.

The 3rd case. Early in the morning of the 26th July 1861, I was called emergently to see a child "Hoossain Ally," about 4 years old. On my visit I found the patient rolling and crying from severe pain in the abdomen, which came on at short intervals. When free from the pain, he complained of tickling in the throat and was seen occasionally to apply his hand to it. From the last symptom I suspected the existence of round worms, and my suspicion was confirmed from an inquiry into the previous history of the case. A dose of turpentine with castor oil was given immediately.

1. P. M.—I was informed in haste that the patient was in danger, and that his bowels were only once moved scantily, when he passed two worms. When I saw the child again, he was restless, rolling his head and tossing about his limbs, except the left arm which was apparently motionless with some rigidity through its whole length, but particularly about the wrist and fingers, which were also

contracted. There was also occasional convulsive motion in the limb.

℞ Calomel gr. iii.
Scammonii. G. R. gr. ii.
Jalap. Rad. Cont. gr. vi.
Ft. pulv. i. st.
Congee and broth for diet.

4 P. M.—Symptoms of cerebral congestion. Pulse very frequent; skin warm and moist; passed a few worms in his stools, vomited many, and a few in my presence.

Repeat the powder.
Blister to the neck.
Two leeches to each temple.

8 P. M.—Appears quieter and somewhat relieved. Blister not risen yet; bowels moved several times, motions scanty and slimy; passed 14 worms of moderate size, and continues to vomit occasionally.

27*th*, 6 A. M.—Passed 41 worms in all during the night, and in one motion he is said to have expelled 20 together. They are rather of small size.

8 A. M.—Died.

For the reasons I shall speak of in another place, it is necessary to give the 4th case in its full length as marked in my journal.

Ameena Bee, Æt. 17.

11*th May*, 1859.—A thin sickly looking young woman in a miserable condition, having contraction of the left arm and leg, was brought to me this morning in a bandy by her father "Ismail Sahib," a Lubba merchant of Giddamboor, a village near Vellore. They left their village yesterday, arrived last night at Madras by rail, and appear to have been advised to go to me by some persons at Vellore, who were formerly my patients, and from whom they have brought letters to my address, recommending the case to my utmost care, as being one that has excited much attention of people on account of its peculiar character, and was given up by all the hakeems, &c., that have seen it, as incurable.

Present Symptoms.—The whole left arm is strongly contracted and forcibly drawn backwards, so as to cause the forearm to rest permanently across the back, and the dorsum of the hand to touch the right side a little below the angle of the

right scapula. The fore arm requires some force to be separated from the back and brought forwards, and as soon as it is left to itself in front of the body, it rapidly assumes its abnormal position. The leg on the same side is contracted in such a manner as to keep the heel always in contact with the thigh, but the contraction here is not very strong as the limb can be extended with a slight force, and returns only gradually to its unnatural position when not resisted. The wrist and fingers are also contracted. The leg and forearm are moreover slightly atrophied with partial anesthesia and reduction of temperature. The face is not affected in any part, and there is neither pain in the head, nor in the spine. She cannot move out of her bed, but is able to sit up a little, resting the whole weight of her body on the right hip and arm. She appears to have lost a good deal of flesh, and is much depressed in mind. Pulse smaller on the affected side, bowels costive; tongue foul, and no appetite.

Previous History.—According to the accounts of her father, the patient had been a pretty healthy girl, never having suffered seriously from any disease, except those of a very trifling nature, as simple fever, &c. She arrived at puberty in the 14th year of her age, and had menstruated regularly until a few months previous to her sickness. About 14 months ago she was married to a man, who, on account of having a journey on some very emergent private affairs, was separated from her four or five days after the wedding, without having any opportunity of living with her in the capacity of a husband.

About a month after her marriage she was observed rather suddenly and without any apparent cause to have lost the power of motion in the limbs on the left side of the body to some degree, and very shortly after this they became utterly paralysed with partial anesthesia. The limbs were observed to become rigid and contracted a few months after the attack, and they gradually acquired the abnormal position described above.

Her mind was never deranged in any way in the course of the disease, nor does she appear to have been subject to any symptoms of hysteria or other nervous affection during her life.

With a view to watch the progress of the case carefully, I allowed the patient with her friends to live in my own quarters, in a place intended for some of those that came

for my advice from great distances; and the following medicines were prescribed.

℞ Pil. Rhei. Co. gr. iv.
Calomel gr. iv.
Ft. Pil. i.
H. s. s.
℞ Pul. Jalap Co. ʒi. c. m. s.

13*th.*—The jalap did not act freely yesterday.
Repeat the Pill and Jalap.

15*th.*—Bowels well moved yesterday from the medicine.
℞ Pil. Hydrarg. gr. ii.
Pil. Rhei. Co. gr. iv.
Ft. Pil. i. ter in die.

Pearson's liniment to be well applied to the spine and affected limbs morning and evening.

17*th.*—No change in symptoms, except her bowels are rather free from the use of the pills.
Cont. Med. et Remed.

21*st.*—The menses returned last night for the first time after their suppression.
Cont. Pills and Liniment.

22*nd.*—The arm is removed from her back and placed almost in its natural position on the corresponding side, it could also be easily brought in front of the body, and remains there if left to itself.
Cont. Med. et Remed.

23*rd.*—There is a slight voluntary action in the arm. Bowels costive for the last two days.
℞ Pul. Jalap. Co. ʒi.
Calomel grs. v.
Ft. Pulv. i. st. sd.

24*th.*—Bowels freely moved, menses copious, and she can move about her arm to some extent without assistance. The leg could also be extended to some extent, wrist and fingers are not contracted, and she has some control over them.
Cont. Med.

26*th.*—Free from menses since yesterday. No other change in symptoms since last report.
Cont. Med.

29*th.*—The motion and sensation are restored to some extent in the affected limbs, she can stand up and walk a few steps with support, appetite good, eats all she gets, and sleeps well in the night. The mouth is not as yet affected by mercury.

Cont. Med.

1*st June.*—Improving rapidly.

Cont. Med.

5*th.*—Makes a free use of her arm, wrist, and fingers, and could be made to walk a little without support; complains of pain and great itchiness in some parts of her affected limbs, which are excoriated from the too frequent use of the liniment.

Cont. Pills, omit Liniment.

10*th.*—Much improved and walks about in the house.

Cont. Pills.

14*th.*—The menstrual discharge has made its appearance again yesterday. The symptoms are fast disappearing, mouth not affected.

Cont. Pills.

16*th.*—Complains of excess of menses attended with pain in the loins. Bowels loose with griping.

Omit Pills.

Repeat Liniment.

21*st.*—Menses have ceased. The limbs can be made use of freely, only she cannot run fast or lift up heavy weights.

23*rd.*—Nihil.

28*th.*—Well. Permitted to return to her village.*

In all these cases, then, the palsy was produced by a reflex action, and the contraction or rigidity of muscles was very well marked, and they seem, therefore, to afford a good illustration of what I have stated with reference to the frequency of this symptom in reflex paralysis.

In the 1st and 3rd cases, the reflex action was owing to irritation of the nerves in the intestinal canal from the presence of round worms, which appear to be one of the most common sources of reflex paralysis, and Dr. Brown-Séquard alludes to many cases of this description in his lectures.

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* This case was detailed in one of my official Reports, dated 1st July, 1859.

When Dr. Porteous, as I said before, saw the first case, he immediately asked me if the child was suffering from worms, and after being informed of the nature of the case, he told me that such symptoms are not very rare in intestinal irritation among children. I had an opportunity of conversing with Dr. Cornish on this subject, and he related to me a few similar cases from his own practice among European patients.

In the 1st case, the origin of the palsy was so clearly traceable to the existence of lumbrici, and the decline of the disease was so directly in correspondence with their expulsion, that this case may be considered as one of the best examples of reflex paralysis that we could possibly produce. In the 3rd case, too, the disease was plainly attributable to the same cause, but the irritation was so great here that it was soon followed by the head symptoms, which rapidly proved fatal. It might be argued that in this case the paralysis was the result of the cerebral affection, but to this I may say that the palsy preceded the head symptoms by a few hours, and even granting that it occurred simultaneously with them, it is more reasonable to attribute the whole symptoms of the case to the original cause (irritation of worms), than to consider one of them as the result of others.

This case is also very interesting in showing the large number of ascarides lumbricoides that could exist at one time in the intestinal canal of children, and the great rapidity with which they sometimes prove fatal by affecting the brain.

Exposure to cold air was the cause of paralysis in the 2nd case, and as this is also one of the chief causes of rheumatic palsy, there is, as would naturally be expected, some difficulty in distinguishing this variety of the disease from the one arising from a reflex action after the exposure of the body to the same cause. Dr. Brown-Séquard remarks, "It is true that cold and wet often cause rheumatism; but when, after an exposure to cold and wet, a man is suddenly seized with paralysis, without having the least symptom of rheumatism, we certainly have no right to place his affection in the vague group of rheumatismal paralysis." The reflex paralysis, therefore, differs from rheumatic palsy chiefly by the absence of signs of rheumatism, which, of course, cannot be wanting in the latter, as it generally depends upon the compression of the nervous and muscular

fibres, from "a rheumatic effusion," which takes place into the cellular tissue of the affected muscles.*

The aggravation of symptoms which was occasioned by applying a seton to the neck in this case, led me to the suspicion of irritation in some part of the nervous centres, but this does not appear to have been really the case, for, as far as I was able to inquire, there was no obvious evidence of any disease of the brain or spinal cord. In this case the hemiplegia was complete with regard to its extent, the face being involved in the disease; but, I regret I have neither noted in the case, nor recollect now, whether the affection of the face was owing to the contraction of the paralysed facial muscles, as is said to have been observed sometimes, or to their relaxation, as is generally seen. Dr. Carswell states, "It is of importance to note the presence of this state (contracted) of the muscles of the face and eyes, as it produces changes peculiarly characteristic of paralysis from softening. We have seen that a paralysed extremity may be contracted and held in a state of permanent flexion. The same thing happens in the paralysed side of the face. The muscles of this side, spasmodically contracted, are drawn upwards and backwards, and produce that deviation in the form and situation of the mouth observed in this disease as well as in apoplexy. But the fact to be noticed in the present case is the deviation of the mouth to the paralytic side, the opposite of what is observed in apoplexy, in which disease it is drawn towards the healthy side."†

These remarks appear applicable also to the facial muscles in reflex paralysis, and perhaps this was really the case in the case of "Ghoolam Mohdeen," because there were occasional but distinct muscular twitchings on the affected side of his face, including the eye; but I cannot be too positive on this point for the reasons I have just stated. Besides the twitchings of the facial muscles, there were constant, and occasionally very strong, convulsive motions in the arm in this case; this is not, I believe, of rare occurrence in paralytic contraction, and seems to depend on the same cause which gives rise to the latter condition of muscles.

The 4th case is as remarkable for some of its features as it is for the intricacy and obscureness of its rise and progress, and therefore, requires more explanation than any of

* Vide Dr. Althaus's Treatise on Medical Electricity, page 271.

† The Cyclopædia of Practical Medicine, page 8.

the preceding ones. The peculiar manner in which the limbs on the left side of the patient were contracted and placed in an abnormal position, renders this case very singular, if not unique. In fact, the patient was rendered a cripple, and at first sight I was somewhat at a loss to form an opinion as to the true nature of the disease, but on tracing out minutely the previous history, I was satisfied that it was originally a case of hemiplegia, which subsequently and gradually terminated in deformity of the limbs. But, I must confess here that I was not prepared to admit the possibility of so great a deformity as witnessed in this case, in cases of paralysis, till I had an access to the latest edition of Dr. Watson's "Lectures on the Principle and Practice of Physic," and to Dr. Todd's "Clinical Lectures."

Besides hemiplegia if there is any other disease at all in the whole nomenclature that could possibly simulate the above case, when its history and symptoms are taken together into consideration, hysteria is one; for it is well known to appear sometimes under such various shapes as could scarcely be imagined, and to imitate almost all the important diseases we are acquainted with, particularly the one under question, hence the term hysteric hemiplegia. But that this was neither a case of hysteria nor of hysteric hemiplegia is proved beyond a doubt, not only from the perfect immunity the patient had enjoyed from all hysterical fits or symptoms during the whole course of her life including the period of her ailment, but also from the greater permanence and duration of the disease, which had extended to more than a year without any thing to lead to the suspicion of interval or intermission. That an hysterical constitution or diathesis is essentially necessary to constitute hysterical paralysis will be proved by referring to all the works on Medicine, which contain a description of this disease, and Dr. Todd says (page 261), "Let us now inquire into the nature of the hysterical hemiplegia, or that form of hemiplegia which occurs in hysterical patients, without any apparent lesion in the brain. Hysterical paralysis is by no means of uncommon occurrence, the variety most frequently met with being that which is called "hysterical aphonia," wrongly termed *aphonia*, because the subjects of it are almost always able to speak in a whisper. This may be considered the type of this kind of paralysis. It frequently comes on very suddenly, and goes off just as suddenly as it came."

There is one circumstance in this case which may create

the suspicion of *emotional* paralysis. This is the marriage of the patient, which took place about a month previous to her ailment, and a few days after which the bridegroom was separated from her without having any opportunity of living with her in the capacity of a husband, on account of a journey on some very emergent private affairs. On enquiry, although there was no evidence of any excited or depressed passion, but, even supposing that there was some emotion of grief in consequence of the untimely separation from her husband, there is no way in which the hemiplegia in this case could reasonably be attributed to this cause. Besides the existence of direct relation between the recovery and restoration of uterine function, which I shall speak of instantly, and which is certainly not in favor of the above notion, there are other and stronger objections against it; in the first place, unless a paralysis follows immediately the occurrence of passion or emotion, it cannot be considered emotional; secondly, the emotional paralysis is of very short duration, being generally only of a few days;* and thirdly, that the husband of the patient returned to her immediately on hearing of her sickness, and they lived together for some months, but she instead of getting better, appears to have suffered equally much in his presence as in his absence, which, of course, should not have been the case if the separation was really the cause of her illness.

As both hysterical and emotional palsies are also mere species of reflex paralysis, the object for which I have brought forward the above case will not be undervalued, even if it were one of those kinds; but, *in the point of diagnostic view, it is not accurate to assume any thing without a sufficient reason.* What was then the cause of hemiplegia in the case under our consideration? The great probability is that this was a case of reflex hemiplegia depending on some morbid impression or irritation of the sensitive nerves of the uterus on account of its disordered condition as indicated by the suppression of its function, and that the contraction of the muscles was likewise the result of the same cause, as is sometimes the case, which I have already explained. I am strongly supported in this opinion, on one hand, by the complete absence of all other sources of paralysis,† and on the other, by the direct and undeniable connection that had existed between the hemiplegia and the

* See Dr. Todd's "Clinical Lectures," page 278.

† See Lancet, July 20, 1861, page 55.

catamenia of the patient. What I mean from the last part of the above sentence is, that it will be observed from the case that "Ameen Bee" was attacked with paralysis shortly after her menses were stopped. Being convinced from this that the disease was dependent on the suppression of that function, I resorted at once to the use of emmenagogues and the beneficial influence of these medicines confirmed my opinion; because, the recovery of the patient was not only marked first on the return of the menstruation, but its subsequent progress and speediness were also quite in correspondence with the freeness of that discharge.

In further support of my argument I may state that there are instances on record in which paralytic affections have been traced to suppression of the menses, and Dr. Copland details a case of one of his own patients (Dictionary of Practical Medicine, page 842) in which the palsy was directly attributable to amenorrhœa.

The position of the paralysed limbs in this case requires to be explained next. We have seen that paralytic contraction generally occurs in partial paralysis, and that, of all the voluntary muscles, those of the limbs are more prone to it. Of these, again, the flexors of the upper extremities exhibit this condition more frequently and in a greater intensity; but out of many cases of this description given by authors, I may repeat, there is not one in which the deformity was so great and peculiar as noticed in the arm of the case under review. To account for this it is necessary only to say that the muscles that are chiefly concerned in placing the arm across the back under the act of will in health, will also produce the same position when forcibly contracted from disease. The Latissimus dorsi is a large and strong muscle, and when forcibly contracted and assisted by the same condition of the rotators of the humerus inwards (subscapularis and teres major) will carry the upper arm to a great extent on the back, and give rise to the deformity in question, if the lower arm is at the same time flexed stongly by the contraction of its muscles. The position of the leg in this case requires no explanation as it simply depended on strong contraction of the flexors of that limb without any complication, and there are one or two instances of similar occurrence on record.

The contraction of the limbs in this case, like that in all the others I have detailed in this paper, was of that kind in

which there is little or no alteration in either the nutrition or structure of the muscles, and consequently they remain unchanged in their appearance and firmness for a considerable period. This state, of course, differs widely and essentially from, and must not be confounded with, the chronic shortening of the flexor muscles, which is sometimes observed in longstanding cases of rheumatism, anchylosis, and paralysis without contraction of muscles. The chronic shortening in the words of Dr. Todd is, "undoubtedly a form of muscular atrophy, of which a contracted and rigid state is a prominent feature. In this condition the muscles are wasted and stretched like tense cords between their origins and insertions."

According to the same great physician, muscles with paralytic contraction in cerebral hemiplegia, are "frequently more excitable by galvanism than the corresponding muscles on the other side," and the use of electricity in any form, and bleeding are quite contraindicated in cases with such condition of muscles.* I have not had any opportunity of trying galvanism in any of these cases, but from what I have seen of the effects of counter-irritation in the 2nd case, I have no doubt that the above observations would also be applicable to reflex palsies with muscular contraction.

Had the contraction of the muscles not been preceded by a paralytic condition in the 4th case, it would have been a matter of great difficulty to form a correct diagnosis of it, for, in those instances in which the palsy is accompanied by this symptom during the whole of its course, the paralysed state of the affected limbs is not easily distinguished. The only way of recognising palsy in such cases is, that the limbs will be more or less, according to the severity of the disease, unable to obey the command of the will, and if a due attention be paid to this point, and to the previous history of individual cases, many of the cases that are generally considered to be of simple *permanent* contraction

* Dr. Althaus in his able treatise on "Medical Electricity," concurs with Dr. Todd, in his opinion as regards the use of electricity in paralysis with muscular contraction, after many trials. With regard to the *early* rigidity, he writes (page 264), "It is quite obvious that in cases of this kind there is not the slightest reason for the therapeutical application of electricity, which would in all probability aggravate the symptoms, arising from an irritative lesion of the brain"—and in cases of the *late* rigidity, his opinion is (page 265), "In most of these cases the electric treatment should not be resorted to; but in some cases of long standing, an electric excitation of those muscles which are antagonists of the rigid muscles, may serve to restore the disturbed equilibrium between certain sets of muscles."

of muscles, will, in my humble opinion, turn out to be those of paralytic contraction.

In conclusion of my remarks on this case, I may be allowed to state that I saw the patient's father about a year ago, who had brought to me some more patients from his village, and informed me that his daughter has continued perfectly healthy, and free from all disease (particularly hysterical) since she left Madras, and had given birth to a healthy child a few months before his visit. I availed myself of this opportunity to inquire again into the history of this case before the patient was placed under my treatment, and found every thing recorded in the case to be quite correct.

Art. X.—*Three Cases of Poisoning by Stramonium, with Remarks.* By John Shortt, M.D., Zillah Surgeon, Chingleput.

During the last six months three cases of poisoning by Datura were brought to the Civil Dispensary; in one instance for medical treatment, and in two others for confirmation as to the cause of death.

Poisoning by Stramonium, either as a suicidal or homicidal act, has hitherto been uncommon in this District, although every native is familiar with the poisonous qualities of the plant. During the four and a half years that I have been in charge of this Zillah these are the only instances that have come under my observation.

Two varieties of Stramonium are found growing in every part of this District, the Datura fatuosa, or purple flowered, and the Datura metel (alba) or white flowered.

The purple flowered variety is rather rare, but the white flowered is seen on the dunghill of every village, in waste places, and by the road side. It makes its appearance soon after the monsoons and thrives with great vigour, pushing forth its large, conspicuous, white, tubular corolla, and giving beauty to localities otherwise defaced by refuse and neglect, but masking in its showy form a deleterious poison. The beauty of this pernicious plant has long attracted the notice of travellers. Heber celebrates it thus—

* "While to the cooler air confest
The broad Datura bares her breast,
Of fragrant scent and virgin white
A pearl around the locks of night."

* Vide Bishop Heber's "Indian Journal," Vol. I, page 115.

I have carefully compared the botanical characters of the Stramonium as given by Royle in his Materia Medica with those of the plants found growing here, and find that they correspond in every particular. They are as follows:—*

"Datura Stramonium, (Datura metel) or Thorn apple is an annual of vigorous growth, about 3—5 feet high. Stem much branched, dichotomous above, bushy, fœtid, smooth. Root large, white, and fibrous. Leaves from the forks of the stems, large, unequal at the base, ovate, unequally pinnate, dentate, smooth, variously, and acutely sinuated, and toothed, simply veined, of a light dull green color. Flowers axillary, erect, white, sweet scented, especially at night, about three inches long.

"Calyx oblong, tubular, ventricose, five angled, five toothed, dropping off and leaving a circular mark around the base of the ovary. Corolla funnel-shaped, regular, angular, plaited, with mucronate lobes. Stamens 5. Stigma thick, obtuse, two lobed, ovary four celled, capsule as large as a walnut, dry, very prickly, four valved, with two partially bi-partite cells, containing many brownish or black flattened reniform seeds."

Case I.

History.—Ramanooja Iyengar, a Brahmin, aged 41, five feet eight inches in height, said to have been apparently in the enjoyment of health, left his house at the village of Congeevaukum, at 6 A.M. on the morning of the 12th August 1862, to visit his rice fields as was his usual custom. He returned home at about 8½ A.M., when he grew giddy, and fell to the ground; on being questioned by the women of the house, he stated that he had eaten "*Oomatum elai,*" or Stramonium leaves; soon after he grew violently delirious, and died comatose at about 9½ A.M.

Conveyance of the Corpse.—The Sub-Magistrate of the Streepermadur Taluq sent the corpse in to me for examination. The body arrived at the Civil Dispensary at 7 A.M. on the 13th of August, having been conveyed a distance of 30 miles in a common cart.

Description of the Body.—It was that of a corpulent man, and was laid out on its back, the arms were crossed over the abdomen and tied together by the thumbs, the feet were closed and tied by the great toes. Head shaved excepting a small pigtail, no whiskers, or moustaches, some short grey hairs visible on the sides of the cheeks. Face and eyes

* Vide Royle's "Materia Medica and Therapeutics," edited by Dr. Headland, 3rd edition, page 573.

covered with a white foamy secretion which was escaping by the mouth and nostrils, eyes glassy, pupils dilated, face bloated, surface of body free from marks. Bones entire. There were no indications of decomposition.

Post-mortem Examination: Head.—Not examined.

Chest.—The different viscera were healthy, but the posterior parts of the lungs were much congested from gravitation after death. Heart empty and flaccid.

Abdomen.—On opening the stomach nearly 2 oz. of a dark green pultaceous mass was found which, on being washed, proved to be the debris of undigested leaves. The mucous membrane of the stomach was greatly congested throughout its extent, more particularly along the great curvature.

Duodenum.—Empty.

Jejunum contained a quantity of a pulpy mass of a green colour and peculiar musty odour. The mucous membrane of the intestines was congested throughout its extent, but in a lesser degree to that of the stomach.

All the other viscera were found healthy.

Case II.

History.—On the 25th of October 1862, at 7½ P. M., a girl aged 14, named Kulli alias Meenachee, of the Pandarum caste, was brought to the Civil Dispensary for treatment by Mr. Inspector Brown. The girl was said to have eaten *Oomatum kai* with the intention of destroying herself.

Symptoms.—Menachee on admission had a wild appearance, was stupid and unconscious of her state; when roused she gave a foolish vacant look around. Pupils widely dilated; a glairy saliva dribbling from the mouth; the lower lip much swollen and bruised; skin warm, and dry; pulse 65, slow and full.

Treatment.—On admission 3ss. of sulphate of zinc dissolved in warm water was administered, but as this had no effect the stomach pump was brought into play and the stomach emptied of its contents, and washed out. The girl on being questioned now replied she was better; stimulants were freely administered and the girl put to bed. She had a good night's rest and was feeling well the next morning, when a dose of castor oil was administered to clear out the bowels.

Patient's Statement.—Meenachee stated that in consequence of having been beaten and abused by her mother early on the morning of the 25th October, at about 8½ A. M., she had plucked an "*Oomatum kai pinjee* (a young fruit of the Stramonium), crushed it on a stone and collected the young seeds, of which she eat about one third. She returned to the house about 9 A. M., and on entering staggered and fell. When asked what was the matter with her, she replied that she had eaten Oomatum kai; this is all she remembered.

Statement of the Mother.—Her mother stated that on learning from her daughter that she had eaten Oomatum kai, she immediately administered to her some "*Eloopai poonak*" (oil cake from the seeds of the Bassia longifolia) dissolved in warm water, which made her sick, and after a time she gave her a decoction prepared from the leaves of the Indigo (Indigofera tinctoria); but the girl continuing dull and stupid most part of the day, by order of the Inspector of Police she brought her to the Dispensary in the evening for treatment.

Case III.

History.—On the 14th day of December 1862 Ammoyee, a girl of the Moodelliar caste, aged 18, residing in the village of Seeroovanchoor, said to have been in the enjoyment of good health but subject to colicky pains, was observed early on the above morning to be giddy and to stagger. When questioned as to the cause she hesitated for a time, and then replied that she had eaten *Oomatum kai*, which she had procured from a plant in the compound.

Statement of a girl in the house.—On subsequent enquiry a girl living in the same house stated that she found Ammoyee grinding some vegetable substance early that morning, and on asking what it was, she said it was the green fruit of the tamarind.

Treatment.—On ascertaining that the girl had eaten *Oomatum kai*, her mother immediately gave her some *Eloopai poonak*, dissolved in conjee water, as an emetic; this failing in its effect, she then procured the juice of the red lotus leaves and gave it to her to drink, which also failed to produce emesis. In about an hour the girl became delirious, commenced tossing about, picking her clothes and talking incoherently.

The juice of the red lotus was now repeated, but without

effect, and at about 9 A.M. convulsions set in, and in one of these fits the girl died at 10 o'clock.

Mother's Statement.—Her mother states that the girl had never menstruated; she gave no reason for having eaten the Oomatum kai; but for the last four or five years she had been subject to colicky pains which generally came on once in three or four months continuing for a day or two—and the mother believes the girl eat the Oomatum kai with the view of putting an end to her sufferings from the colic.

Conveyance of the Corpse.—The body was brought in a cart from the village of Seeroovunchoor, a distance of 30 miles, by order of the Sub-Magistrate of the Streepermadur Taluq for examination; it reached the Civil Dispensary at 5 P. M. on the 14th of December, 1862.

Description of the Body.—The body was laid out on its back, hands and feet tied together as in Case No. I., and was that of a well developed young woman exactly five feet in height. Bones entire, no marks or other injuries were visible. There were evidences of incipient decomposition in the detaching of the cuticle of the hands: abdomen was slightly distended, face bloated, eyes dull, pupils dilated, and a frothy fluid oozing from mouth and nose.

Antopsy; Head.—On removing the skull cap, the scalp and membranes of the brain were found highly injected, the brain firm. On cutting into it the puncta vasculosa were large, and prominent; the ventricles empty. No fluid about the base of the skull, the entire brain exhibited a dry firm appearance; and a peculiar greyish white colour.

Chest.—The lungs were healthy, there was much hypostatic congestion at the base and posterior parts. The heart small, empty, and flaccid.

Abdomen.—Stomach nearly empty and the mucous coat along the sides of the stomach much congested, more particularly along the great curvature. Several pieces of the spring capsule of the Stramonium were found imbedded in the mucous membrane, one or two of these were sufficiently large to be recognized at once as forming the prickly outer covering of the fruit of the thorn apple.

Duodenum contained 25 Stramonium seeds as also a good number of seeds of the common red chilly, with portions of its skin mixed up into a greenish pultaccous mass, having a strong musty odour.

Jejunum contained a nest of 35 lumbrici; and the *Ileum*, some green softish mass with a few seeds of the Stramonium.

Genital Organs.—The uterus and its appendages were found healthy. The hymen was of a crescentic form, but perfect.

REMARKS.

From these cases it will be seen how deadly the Stramonium plant is. In Case No. I. death seems to have taken place in 3½ hours from the ingestion of the leaves, of which, judging from the quantity found in the stomach and intestines, I should say that Ramanooja Iyengar must have eaten at least 3 ounces.

But there seems no traceable cause to account for the commission of suicide by Ramanooja Iyengar. He was said to be in easy circumstances, and to have lived on amicable terms with his family and friends. In the absence of evidence to the contrary, it would be charitable to suppose that he had committed suicide in a fit of temporary insanity. It came out in the evidence that he had also taken "*Eloopai poonak*," but it failed to produce vomiting.

In Case II. Meenachee states that she plucked a tender fruit from the plant and eat one third of the young seeds.

The Thorn apple contains numerous seeds, the average of several gave 250 to a fruit, so the girl must have eaten at least about 80 seeds. She states that they were very bitter, and in an hour she began to suffer from their effects.

On the mother learning that her daughter had poisoned herself, she at once gave her a quantity of "*Eloopai poonak*" which made the girl sick, but the rejected matter was not examined. After this the decoction prepared from the *Indigofera Tinctoria* was given, the girl had now become unmanageable and talked wildly, the force that it was necessary to resort to in administering the medicines, caused injury to the lower lip, which accounts for the swelling that existed on admission. No information reached the Police until late in the evening, when the Inspector at once sent the girl for treatment to the Dispensary.

Neither the stomach pump nor the castor oil which was given to complete the cure, brought away any seed or other part of the fruit.

In Case No. III. Ammoyee was a corpse in four hours from eating the green fruit. She was a girl of good caste and

somewhat respectably connected: it is certainly unusual for a girl of her age and caste to continue unmarried. Although of short stature, her person was fully formed, and her death gave rise to the suspicion that she had either committed herself or considered her unmarried state a disgrace to the family. Some such idea prevails I believe among the Hindoos. Her mother states that she had never menstruated, which, considering her age and bodily development, is very unusual in a native girl.

The necroscopic examination in this case was more extended and minute. The presence of the poison in the stomach and intestines was conclusive. The nest of worms (*Ascaris lumbricoides*) amounting to 35, might account for the colic pains to which she was said to be subject. But there was no evidence to shew that the girl suffered from colic immediately before or at the time she eat the poison.

The girl was to all appearance a virgin, the hymen being complete, and the state of the labia, vagina, uterus, and ovaries was confirmative of this opinion.

A further consideration of the cases and their attendant circumstances leads to the inference that the example set by Ramanooja Iyengar in Case No. I. led to the commission of suicide, in the two subsequent cases, by Stramonium. Meenachee in Case No. II. lived almost opposite the Civil Dispensary, she saw the corpse of Ramanooja Iyengar brought in for examination, and with a girl's curiosity, no doubt made herself acquainted with the cause of his death; and on being chastised by her mother some time after, rushed forth in search of the Stramonium, but fortunately for herself the "*Eloopai poonak*" administered by her mother produced emesis, and thus perhaps the greater part of the poison was ejected from the stomach. To this circumstance she probably owed her ultimate recovery.

Ammoyee in Case No. III. was also acquainted with the death of Ramanooja Iyengar, his village was about five miles from her own where he was well known. His death caused a great sensation and was for a time the talk of the village, so that when Ammoyee either from the inability to bear the colic pains she is said to have been subject to, or from the fact of her continuing unmarried preying upon her mind, or perhaps from both these circumstances, thought of ending her existence by poison: the Brahmin's death from Stramonium must have occurred to her as the easiest way of destroying

herself, with the Stramonium ready at hand, for the plant was growing in her own compound. She endeavoured to make it as palatable as possible, in order that the bitterness of the fruit might not deter her from eating a sufficient quantity to produce the desired effect; for this purpose she seems to have ground the entire fruit into a chatney with salt and chillies and thus to have partaken of it.

The post mortem examinations in the two cases that proved fatal were nearly alike. The countenances full and bloated, pupils widely dilated, the oozing of a frothy fluid from mouths and nostrils, the hearts empty and flaccid, and the mucous membrane of the stomachs highly, and that of the intestines slightly, congested.

I regret much not having examined the head in case No. I., but in No. III. the congestion of the scalp and membranes, the firm, dry appearance of the brain, and the absence of moisture at once attracted my attention.

In case No. II. the pupils were widely dilated and saliva, although not frothy, flowed from the mouth; these are the only two instances in which there was any resemblance to cases I and III.

Almost every native is aware of the poisonous qualities of the Stramonium, and it has long been used by them for the purpose of "*hocussing*," an instance of which came under my own observation some years ago.

A smartly dressed dubash presented himself at the house of a respectable family at a Mofussil station, and represented himself as the servant of an Officer who was travelling, he said that his master, who was then lying ill at the Traveller's Bungalow, being hard up, had directed him to dispose of a quantity of wine and beer he had. The bait took admirably, as in most out-stations except perhaps from Regimental Messes, no liquor could be obtained.

The lady at once deputed her confidant, the ayah, to go and bring some of it with a list of price, &c. and gave her 10 Rs. in case an advance was needed: this occurred between ten and eleven o'clock in the forenoon. Nothing further was heard of the ayah until about 4 P. M., when she was brought home by a friend who found her wandering in the bazaar. At the sight of her mistress she first began to cry, endeavoured to hide herself and was afraid of every one that approached her. She picked at the air with her fingers, sometimes was laugh-

ing, at others crying and rushing away to hide herself as if apprehensive of some evil. Her countenance was wild, pupils dilated, tongue dry, and white; pulse slow and moderately full.

On seeing her I ordered a zinc emetic which acted freely, but the vomited matter contained nothing but some half digested rice.

She was now taken away by her friends who, believing her to be under the influence of magic, poured the juice of several limes on her head, and gave her a cold douche, after which it appears she slept soundly and awoke quite well the next morning, when she made the following statement.

On proceeding with the dubash he took the road to the bazaar (which was about two miles distant.) He became very communicative, spoke of the advantages her mistress was likely to derive from the bargain. He next produced some rice from his pocket, asked her opinion as to its quality and dryness, and enquired at what price it could be purchased as he was a stranger to the place. Now the natives as a rule on examining rice generally put a few grains into the mouth and bite it to test its dryness. On being asked if the rice was sufficiently dry, she put a few grains into her mouth, which in the course of conversation she believes she swallowed.

He next asked her for some betel which she produced, he then asked how much money she had, she produced the 10 Rupees her mistress gave her, which he took, on his asking if she had no more, she produced Rupees 2 and some change of her own, which he also took and placed the whole in his pocket. He then took her to a grain shop and asked the bazaarman to measure out a Rupee's worth of grain, telling her to overlook the measurement while he went for a basket. On seeing him go the ayah said that she attempted to call out and ask him for her money, but her tongue failing her she could only point to him. This was all she remembered, she was not aware of wandering about nor of the circumstances under which she was found and brought home. The woman confidently asserted that she had taken nothing from the man but the rice of which she may probably have swallowed 10 or 12 grains, she found it rather bitter and remarked it to the dubash, who said it had been in his pocket with some tobacco from which it had probably received the taste. It was generally believed that the rice given to the ayah had

been steeped in the juice of the Stramonium, and from the symptoms I was of the same opinion. Nothing further was seen or heard of the dubash who no doubt made off with his booty.

The Stramonium although such a deadly poison is a capital medicine, and when used with caution and care almost every part of the plant may be turned to account. The seeds have long been considered a specific for Hydrophobia by the Chinese. It was introduced into India by the Jesuits, and if I am not greatly mistaken is much in favor at the present time among the Native Christians of Pondicherry. The dry seeds of the Stramonium are administered in doses of 1 to 2 grains with buttermilk (whey) or cold rice water every two or three hours until some perceptible effect is produced in the system. I have seen the leaves smoked with success in chronic cases of asthma and have used the watery extract in lieu of Belladonna to dilate the pupils. Mr. H. Adam when officiating for me recommended the use of a liniment made of the leaves in rheumatism. Royle also recommends it as an anodyne, antispasmodic and calmative in neuralgic affections, asthma, rheumatism, &c.

In conclusion it is necessary to observe that the "*Eloopai poonak*" administered in these cases is generally used by the natives as an emetic, but I am told that it produces much nausea before it causes emesis.

The oil from the "*Eloopai*" seed (Bassia longifolia) is in general use as a substitute for ghee and the fleshy corolla of the flower is eaten both fresh and dry. It is also used to distil country arrack from, and the fruit is eaten by native children. The juice of the red lotus or *Nymphea rubra* is said to possess emetic properties, owing to which it was given in case No. III., but it seems to have failed entirely in its reputed effect.

The Indigo plant (Indigofera tinctoria) is said to be an antidote in all cases of poisoning, more particularly in those by arsenic. The leaves are made into a decoction, and from 2 to 4 ounces administered every two hours.

The indigo itself is said to be an antidote to snake bite, the wound is scarified and the indigo freely applied, and from 2 to 5 grains administered internally. It would be worth while ascertaining the properties of these remedies.

Art. XI.—*On the Treatment of Fever in the Hospitals of Vizianagrum in the Season of* 1861. By James Donaldson, Esq., M.D.

At the beginning of the febrile season of 1861, Mr. Cockerill and myself were one day discussing the supposed febrifuge virtues of *Cobweb*, and the advantages attending on its use; whether it could be depended on to cure most cases of fever in India, &c.; and we agreed, in order fairly to test the point, to treat our patients after a certain manner, to tabulate the results, and, after the season for fever should be over, contribute our so gained experience to the "Madras Quarterly Journal of Medical Science."

Unfortunately for the full carrying out of this plan I was summoned to Waltair in March, was stationed there until the beginning of July, and during that time had no cases of fever to treat; and, as the Medical Officer in charge of the 46th Regiment treated cases of fever admitted during that time in his own way, all such cases were lost for comparison. The list of cases therefore in the 37th Regiment is much longer than that of the 46th; in other respects the comparison has been fully carried out. Our agreement was that Mr. Cockerill should treat all cases of fever which required more than the administration of a little cinchona bark decoction, or the Liquor Quinæ (amorph.) with disulphate of quinine, in such doses as seemed desirable: and I undertook to treat all my cases, severe enough for the test, with cobweb only, or in as far as might be possible or advisable in each case. As my cases since July, severe enough to be treated in this way, only amounted to 16 or 17, I have borrowed a few well marked cases from the last year's Journal,* and this will account for the greater diversity in type in the cases of the 46th, as the severer cases of "remittent" and "continued" fever were all admissions from amongst those parties which conveyed treasure to the hill at "Galicondah," whilst the Europeans and Sappers were stationed there in 1860. I shall first furnish the tables of comparison between each set of cases; so arranged as to present at a glance the various results, the quantities of quinine used, &c.; and then make such remarks as seem called for to explain any point

* This paper was written in November 1861, but illness prevented its being sooner sent for publication.

of peculiarity or interest in judging of the comparative merits of the two methods of treatment. I do not desire in this paper to endeavour to re-introduce the spider's web to the notice of my Medical brethren in India; I did so in the "Indian Lancet" (April 1st 1860): I wish merely to publish these our experiences of one fever season as proposed by Mr. Cockerill and agreed to by myself at its commencement. If it can be proved that cobweb will cure even ordinary cases of fever without expending the now so expensive alkaloid quinine, it cannot be doubted that a large amount of economy in our annual expenditure must be the consequence of its more extensive employment.

Mr. Cockerill's Cases.

Type of Fever.	Average No. of days treated.	Average No. of grains of Quinine used.	Longest period in Hospital.	Shortest period in Hospital.	Total quantity of Quinine used in these case.			Quantity of Liquor Quinæ used.	Quantity of Cinchona Lanc. Cont. used.	Largest quantity of Quinine used in one case.		Smallest quantity of Quinine used in one case.	Total No. of cases treated in season 1861.	Deaths.
					Oz.	Drs.	Grs.	Oz.	lbs.	Drs.	Grs.	Grs.		
Quotidian Intermittent.	Eight.	Fifty-nine.	Forty-two days.	Two days.	4	7	16	8	2	4	16	3	66	None.

Dr. Donaldson's Cases.

Type of Fever.				Average No. of days treated.	Average No. of grains of Quinine used.	Longest period in Hospital.	Shortest period in Hospital.	Total quantity of Quinine used.		Largest quantity in one case.		Smallest quantity in one case.	Total cases treated.	Deaths.	Fever cured on what day after treatment by Cobweb.
Quotidian Intermittent.	Quartan Intermittent.	Remittent.	Continued.					Drs.	Grs.	Drs.	Grs.				
16	1	1	7	Twelve.	Ten.	Thirty days.	Three days.	4	16	1	6	None.	Twenty-five.	None.	One day and $\frac{11}{23}$.

From a cursory view of the foregoing tables it might appear that as the average number of days during which the patients of the 37th Regiment were treated was 8, and that of the 46th Regiment 12, quinine had the advantage at least of curing the fevers more quickly than the cobweb, and so restoring men more quickly to their duty. This, however, is easily proved to be a "non sequitur." It is explained thus—In the first place, as I only chose those cases for this "trial of remedies" which shewed *decided and strong symptoms*, I did not in any case administer cobweb at once as I am in the habit of doing, but treated the patients for a day or two, until each case was clearly made out, with cinchona, arsenic or quinine. In the second place, I always keep my patients in hospital, or on the Hospital books, until there has been no return of fever for from four to seven days (according to the previous urgency of each case,) and until, in most cases, the patient is quite able for duty: in the third place, as before mentioned, and hereafter more particularly pointed out, six or seven of these cases were chosen as the *worst* of the cases of the previous year, recorded in the Journal as coming in after a journey to, or a sojourn at, "Galicondah."

Next, it will be seen by table *No.* I, that the expenditure of quinine was, for a feverish place, unusually small. In 1860 the expenditure was above *twenty* ounces in the three months from May to August; this is explained partly by the fact that the men in 1860 had recently arrived from Burmah (where most of them had fever), and had not so completely shaken off the feverish habit, or miasmatic diathesis, if it may be so called—partly also because no "treasure parties" went this year (1861) to the hills, and the fevers were for the most part of a very mild type as compared with those of the year preceding.

It should also be mentioned here that it is not intended by these tables to shew the *exact total* of quinine expended in the Hospitals of the 37th and 46th Regiment during 1861; a small quantity has of course been used for other cases of sickness, and still more for the families of officers and other out-patients; and, in the case of the 46th, a considerable quantity was expended during my absence from the regiment: but the quantity used in these fever cases is given exactly as abstracted from the return books; and the relative proportion used in other cases in the two Regimental Hospitals was probably nearly the same. I shall now, if

the space allowed me for this paper be not exhausted, append a few cases, to shew, why quinine was given in some of these instances before or after cobweb; why it was administered at all in others; and, lastly, to explain the method of exhibiting the web in the various types of continued, remittent, and intermittent fevers. These cases are copied, as succinctly as compatible with the above objects, from the Journal of the 46th Regiment M. N. I. (seasons 1860-61.)

Case I.—*Feb. Intermit. Quot.*

Private M. Sing, admitted with severe fever, ordinary symptoms, on 5th January.

Ordered Mist. Salin Comp.—viz.,

℞ Antimonii Potassio-Tart: grs. ii.
Magnesiæ Sulphatis ʒii.
Aquæ Puræ ʒxvi. *Misce.*
ʒi. to be given every 3rd hour.

6*th January.*—Bowels being relieved and fever intermitted,

Ordered Disulph. Quinæ gr. i. every 2nd hour.

7*th.*—After the quinine was troubled with vomiting and restlessness, the fever returned severely, patient weak; allowed an orderly.

Continue quinine after intermission.

9*th.*—To this date no improvement; fever each day, and the quinine does not agree with patient.

Omit quinine.

Ordered cobweb gr. v. every 3rd hour.

10*th.*—After taking three of the pills yesterday, the fever returned, and Mr. F. (in my absence) did not give any more of the pills.

Continue cobweb pills, fever being present or not.

11*th.*—Better; no fever, nor vomiting.

Continue cobweb pills.

13*th.*—No return of fever; appetite better; but patient weakly.

Continue pills three times daily, and give wine ʒ ii. in divided doses.

16*th.*—Well, but still rather weakly.

Give up cobweb and give gr. i. of quinine thrice daily, and continue wine.

18*th.*—Nearly fit for duty.

19*th.*—Discharged with five days convalescent leave.

CASE II.—*Feb. Intermit. Quartan.*

Ramangooloo, admitted 1st February, with intermittent fever, recurring every third day (for some weeks past) about 1 o'clock P. M. After a small dose of calomel and jalap, and some "Mist. Salin." until fever abated,

Ordered quinine as usual.

6*th.*—Has taken his quinine regularly, but the fever has come on at the usual time.

Continue quinine grs. iii. at once (after intermission) and gr. i. every 2nd hour.

11*th.*—To this date, paroxysm has come on as usual.

Quinine increased.

15*th.*—Fever unchecked and patient weaker.

Ordered cobweb (in pill as usual) grs. v. three times daily.

18*th.*—No attack since taking the cobweb.

Continue idem.

23*rd.*—The 20th February was the day of attack; there was none: but on evening of 21st, a slight attack came on and lasted for a few hours; this being after seven days interval.

Continue cobweb as before.

24*th.*—No return of fever.

Ordered a measure of wine daily.

2*nd March.*—To this date no return of fever.

Continue idem.

5*th.*—No fever, and patient is much better in every way.

Omit cobweb. Continue wine.

11*th.*—Feels quite well, omit wine. Patient discharged to duty.

REMARKS.

In these two cases, a few points of interest may be noticed: 1*st*—The method of giving quinine in *small* doses *often* (gr. i. *ad* grs. iii. every two hours) may be objected to by some as being insufficient; and I know well that some of my brethren, those who have served in Burmah especially, think it necessary to give scruple doses of quinine, often repeated, till the brain whirls again. Such doses

may occasionally be necessary; but I would remark, that in Labuan in 1850, while the island was still the hot-bed of agues and remittent fevers, and where I had abundance of experience in the worst and most stubborn forms of fever, I found that *small doses frequently repeated* (say, grs. iii. every two hours; or grs. 5 every three hours) were quite sufficient to cure all ordinary cases of fever; and that *one* grain repeated every two, three, or four hours, seldom failed to cure ordinary agues of the quotidian, tertian or quartan type.

2*nd.*—It will doubtless be noticed that cobweb is ordered during the paroxysm of fever as well as in the intermission; while quinine is only prescribed during the absence of fever. My experience is that quinine given during a severe paroxysm of fever (and especially where there are head symptoms) not only fails of its effect and does not retard the progress of the disorder; but, if given in large doses, really aggravates all the symptoms, renders the pain and fulness of the head excessive, unbearable: and, not tending to lengthen the succeeding intermission, is at the best an expensive remedy wasted. This is the experience also, I may add, of an esteemed friend long accustomed to battle with the dangerous jungle fevers of Burmah, and who brought our 37th Regiment well out of a feverish place and season. Not so with cobweb; it is not only safely but advantageously given *during* the paroxysm, and often, (as I can testify in my own person,) quickly and gratefully relieves the almost insupportable headache and restlessness of an acute attack. And time is gained, for the succeeding intermission is lengthened even if the febrile attack be not altogether broken.

3*rd.*—As may be seen in Case I. quinine does not agree with many constitutions, and causes great nausea even to vomiting. I never saw cobweb do this, but it often checks nausea and acts as a sedative to the irritable or excitable stomach. On the other hand, quinine is a better tonic in "convalescence" from fevers, while cobweb is only a conservative perhaps, and preserves the strength by rapidly breaking the disease; we have no better "preventive" than quinine, and no better tonic to aid in recovering lost strength.

With this view one grain of quinine was given in wine thrice daily on and after the 16th January in the first case.

Case II. was a very well marked and regularly recurring quartan ague which had lasted for many weeks, and, as I have often before observed, resisted the febrifuge action of quinine altogether. It is in these old cases, well fixed in the constitution, which have resisted daily repeated scruple doses of quinine that the good effects of cobweb are seen to the greatest advantage, and that I have prescribed it with the most successful results.

Case III.—*Feb. Remittens.*

Private Ramasawmy, admitted 16th August, with severe attack of fever, bad headache, much depression, weak pulse, very hot skin, bad cough, and threatening of insensibility.

Ordered Vin. Antimonii ♏ xx. every three hours; patient to be strictly watched for fresh symptoms.

16*th.*—Fever lessened, but typhoid symptoms threaten.

Ordered wine and quinine as patient can bear them.

17*th.*—Fever returned with headache, &c.; bowels now constipated.

Ordered Mist. Salin. Comp. in small and guarded doses.

18*th.*—Bowels opened freely, but no improvement otherwise.

Ordered cobweb grs. v. every three hours day and night.

20*th.*—Cobweb has been regularly given, and the fever gradually lessening has now almost disappeared; cough still troublesome, the uvula enlarged.

Ordered Æther Sulphuric c. Sol. Mur. Morph. ā ā ʒ ss. every three hours, as required,—alum gargle; and sinapism to chest.

Continue cobweb as before.

22*nd.*—Much better in every way.

Continue cobweb, and the other medicine as may be necessary.

24*th.*—Feels quite well; no bad symptom remains.

Omit cobweb; omit draught and gargle, and give sherry wine ℥ i., with quinine gr. i. twice daily.

27*th.*—Quite well, discharged.

Case IV.—*Feb. Com. Cont.*

Private Gungiah, admitted 8th December with strong fever, bounding pulse, great giddiness of the head, &c.

Has had fever continuously for two days past. An emetic ordered 7 A. M.

11 *o'clock* A. M.—Emetic acted very strongly, both as emetic and purgative, and great depression followed; pulse about 130, rather small; fever still present. Mr. F. in my absence gave a little wine and ammonia which was also vomited; after which the patient had some "congee." At 12½ P. M. I saw him again; reaction had set in, fever was strong, and I ordered cobweb grs. v. every three hours or oftener as the stomach bore it. At 5 P. M. the fever left him after two doses of the remedy and did not return.

9*th.*—Fever has not returned; pulse quiet and moderately full; patient is weak.

Continue cobweb.

11*th.*—No return of fever; cobweb omitted, and small doses of quinine ordered with wine.

16*th.*—Well and able to leave hospital as convalescent.

REMARKS.

The above four cases are those referred to especially, as occurring before the season of 1861, and have been extracted from the Journal before me as shortly as possible, with the object of shewing fever in a variety of type treated by the remedy we had discussed, and I had chosen as my "stand by" for the year 1861. A few other cases chosen from the Journal of the 46th Regiment will serve to shew how I employed my remedy in well selected and well marked cases, after proving by a fair administration of other febrifuges that these cases were not disposed to get well spontaneously, or with the ordinary amount of assistance from cinchona or quinine. I did this because one argument used against cobweb has been that "many cases of intermittent and other fevers will get well of themselves if left alone, and would have been cured equally soon without the remedy." I took care therefore in this trial not to obscure results by beginning the remedy until it was clear that the fever was not disposed to subside, or even give way easily to the ordinary treatment. On cases III. and IV. I would only remark that both were very severe in character, the one remittent, the other continued; and I was led to administer cobweb early and steadily from my experience of the like forms of fever in Ellichpore in 1852-53 which troubled me much and defied the ordinary course of treatment.

Case V.—*Feb. Quotid. Intermittens.*

Private Mooniah, 46th Regiment, admitted December 3rd 1860, with severe fever, usual symptoms; no peculiar feature.

Ordered (after usual dose of opening medicine) Liquor Quinæ Amorph. ℥ xv. (equal to grs. 3 of Disulph. Quinæ) c. Decoct. Cinchonæ ℥ ii. 3 times daily.

9*th.*—Up to this date no improvement; fever comes on daily, lasting some hours.

Ordered 2 grains of quinine every 3rd hour.

14*th.*—No improvement. Increased quinine to 4 grains every 3rd hour.

15*th.*—No better; fever the same.

Ordered cobweb gr. x. every 3rd hour.

16*th.*—No fever *for the first time since admission*; patient feels immensely relieved.

To continue the cobweb.

22*nd.*—Has had no return of fever, and is quite well.

Omit cobweb. Digestion not very strong; ordered a little Decoct. Cinchonæ and Dilute Sulphuric Acid thrice daily before meals.

24*th.*—Well; discharged from hospital, but to attend and take the above medicine for a day or two more.

Case VI.—*Feb. Quot. Intermittens.*

Shaik Towcal, Æt. 16, admitted December 8th with low form of fever; distinct exacerbation and intermission, but patient remains feverish with hot skin and quick pulse; is a weakly looking lad.

Ordered Liquor Quinæ (Amorph.) gtt. x. with Decoct. Cinchonæ ℥ i. every 3rd hour.

19*th.*—Up to this date little if any improvement.

Ordered Disulph. Quinæ gr. i. every 2nd hour.

22*nd.*—No better; quinine increased to grs. ii. every 2nd hour.

24*th.*—No better; pulse weaker.

Ordered cobweb every 3rd hour (or 2nd hour if necessary) and to omit every other medicine.

25*th.*—Report is; "already better, fever decreased and the patient has better pulse."

Continue idem.

26*th.*—No fever since last evening; pulse is stronger. To continue cobweb (every 3rd hour) and to have port wine ℥ i. twice daily.

28*th.*—No return of fever; patient getting stronger.
Continue idem.

30*th.*—Continues free of fever and is discharged with orders to come daily for some days and take his medicines.

REMARKS.

These last two cases are copied from the Journal, like the succeeding, but have dates prior to that of the commencement of our trial; they are chosen to shew the kind of cases which were selected for a fair trial of cobweb; and were treated like the others in the ordinary way, and with the dose found by experience necessary to cure the every day cases of fever in Vizianagrum in two or three days. After four grains of quinine every 3rd hour had been given in the one case, and two grains every 2nd hour in the other without in any degree checking the fever, the cobweb was commenced; and it will be seen how quickly in each it succeeded in arresting the disorder.

Case VII.—*Feb. Cont. Communis.*

Private Veerasawmy, Æt. 27, admitted, 16th July 1861 under Dr. Cockerill with continued fever. Pains all over body; pulse quick and full; skin hot, &c.
Was ordered Antim. Tart. gr. ⅓ every 3rd hour.

17*th.*—Same, no remission.
Continue idem.

18*th.*—Same, but fever not so urgent.

19*th.*—Patient rather reduced by the antimony.
Omit, and (ordered by me) to take cobweb gr. v. every 2nd hour.

20*th.*—On duty again at Bimlipatam; Dr. Cockerill watching the case for me, and did not change the treatment.

24*th.*—Treatment was continued to this date, and patient feels well; no fever, but the pulse is weak, and there is want of appetite.
To continue cobweb, and take also 15 drops of Liquor Quinæ thrice daily in a glass of wine.

26*th.*—No appearance of fever, and the pulse is improving; tongue also cleaner and strength returning.

30*th.*—No return of fever, but is not strong.

Omit cobweb; arrack instead of portwine (℥ i. thrice daily).

1*st August.*—Allowed to go out convalescent, and to take his dose of Liquor Quinæ morning and evening.

9*th.*—Readmitted with fever as at first, but not so severe, and attended with distinct intermission.

Ordered quinine gr. v. at once and gr. iv. every four hours.

10*th.*—Had an attack of fever.

11*th* and 12*th.*—No better, and has fever at time of visit.

Omit quinine;

Cobweb gr. xv. every 2nd hour.

14*th.*—Says he had a slight attack of fever yesterday (13th) : none at time of visit. Tongue cleaner.

15*th.*—No fever and looking better.

Continue cobweb.

16*th.*—Ordered ℥ i. of arrack thrice daily.

17*th.*—No fever, but pulse is weak and small, and symptoms of "beriberi" (which often here appears to follow acute attacks of fever) threaten.

To omit cobweb, and give 20 drops of "black oil"* with suitable diet.

20*th.*—Improving slowly and has had no return of fever.

Continue idem.

22*nd.*—Continues to improve slowly, and is able to go out, but is in a delicate state of health, and is allowed to proceed to Ellore his native country, for change of air.

REMARKS.

This was rather a troublesome case. The patient was not a strong man, and was a good deal reduced by the Antimony necessary at first to break the strength of the disease. The fever season was at its height in our station, and on being discharged as a convalescent he soon returned with a fresh attack of fever, notwithstanding that he was taking 15 minims of Liquor Quinæ twice daily. Cobweb a second time cured the fever; and on beriberi threatening, black oil was given with the good success usual in such cases here, and the patient was then sent to his native village to recruit. It will be noticed that the Liquor Quinæ with (for a native) a good allowance of wine was given early in this case, soon after the fever was stopped : this was owing to the great

* Vide MALCOLMSON on Beriberi, p. 311, and WARING'S Therapeutics, p. 347.—ED.

weakness and small pulse which followed the severe attack of fever. Again, on patient's readmission on 9th August, quinine was given in large doses for three days to give it a chance to check the secondary fever: and on its failing to do so, cobweb was administered in much larger than the usual doses.

Case VIII.—*Feb. Intermittens.*

Private Camiah, Æt. 23, admitted 4th August 1861 with fever and ague of ordinary type of some days continuance. After saline mixture, to take Decoct. Cinchonæ ℥ iii. every 3rd hour.

7th.—No better, fever every day.
Ordered cobweb gr. x. every 4 hours.
Omit Decoct. Cinchonæ.

9th.—Had an attack of fever on the 8th; cobweb increased to grs. xv.

12th.—No fever since last report.
Continue cobweb grs. x. every 3 hours.

13th.—No fever.
Continue idem.

14th.—Continues well.
Omit cobweb. Discharged to duty.

Case IX.—*Feb. Intermit.*

Private Sheik Davood, Æt. 23, admitted 26th August 1861, with fever of two days standing.
Ordered Mist. Salin. and Decoct. Cinch.

27th.—Had return of fever.
Omit Cinchonæ.
Cobweb grs. xv. at once and grs. x. every 2 hours.

28th.—A slight return of fever.

29th.— Do. do.
Continue idem.

30th.—No fever.
Continue idem.

4th September.—No return of fever since last report; feels quite well.
Omit cobweb.

5th.—Well; discharged.

REMARKS.

This case is merely introduced here to shew why the remedy was given sometimes in so much larger a dose than

usual in such an ordinary ague. And it should be noted here that I had considerable difficulty in obtaining supplies of cobweb in Vizianagarum; also, that when collected it was generally filled, or much mixed, with soot and other rubbish, so that I found it at times not nearly so active as at Samulcottah where I had better means of procuring it. The above have all been extracted from among numbers of similar records with the pre-arranged object of furnishing an example or examples of each type of the disease in which cobweb has been used. Having so used it constantly for years, I cannot disbelieve that it cures fevers, and that it cures them well and quickly, unless I could believe that some fevers will, without any apparent reason, suddenly get well of themselves, but always by a curious coincidence after and *soon after*, the administration of cobweb whilst other fevers of the same season, type and severity, in the same place and under the same roof, not similarly treated go on unchecked, or daily acquiring more strength. I shall only append one more case to shew the good effect of cobweb administered immediately after admission in continued fever.

Case X.—*Feb. Cont. Communis.*

Private Sheik Nutta, Æt. 39, admitted 10th June 1860, with severe fever; pulse full, not strong; skin rough and dry, &c. Has been taking *Compound Saline Mixture.*

11*th.*—No better; fever persists strongly without remission.

Ordered cobweb gr. iv. increasing to gr. x. every 4 hours.

12*th.*—Fever stopped yesterday towards evening, and has not since returned. Pulse still full. To continue cobweb.

13*th.*—Had a slight return of the fever yesterday afternoon, which continued part of the night; skin very harsh.

Continue cobweb every 2nd hour.

℞. Calomel gr. ii.

Pulv. Jacobi gr. iii. *horâ somni sumend.*

14*th.*—Much better; patient has had free perspiration and pulse is softer; no fever.

Continue cobweb.

15*th.*—Had a little fever, he says, from 10 to 12 o'clock last night; looks well now.

Continue cobweb every 3 hours.

16*th* to 20*th*.—No return of fever, but is weakly and of weakly constitution.

Omit cobweb; to take wine with small doses of Liquor Quinæ twice daily for a few days.

23*rd*.—No return of fever; feels quite well.

Arrack instead of wine.

25*th*.—Continues well. Discharged with three days convalescent leave.

REMARKS.

This was one of those severe fevers which I mentioned as being admitted in season 1860 after the periodical visits of pay parties to the adjacent hills; and it was peculiarly interesting to me as occurring at the same time as a very similar case which was treated on the most approved method, but terminated fatally. This latter was carefully treated by two Medical men in consultation; took calomel and James' powder; got quinine at the proper time, wine and every thing that could be thought of, and the fever was subdued, but the subsequent depression was great, hydro-pericardium followed, great dyspnœa and faintness, and the patient sank.

A careful and dispassionate attention to those cases is all I ask for, and if even a few of my professional brethren in India are thereby induced or encouraged to give cobweb a fair unprejudiced trial, I shall have attained the object in view in the publication of these remarks.

Art. XII.—*Case of Colonic Intussusception, with some Observations on Insufflation as a remedy in Acute Obstructive Diseases of the Intestines.* By Surgeon Major A. Blacklock, Physician of the General Hospital, Madras.

Every case of spasm of the bowels with obstruction, from whatever cause, is of considerable value as a guide or a warning in future emergencies of the kind; and the rarity of cases of intussusception, the scantiness of Medical literature on the subject, above all, the difficulties in the way of a correct diagnosis, and the very fatal nature of the affection, render unnecessary any apology for offering the

following instance to the readers of the "Madras Medical Journal."

Michael, Æt. 43, Seaman, French Ship "Jessore." 3rd voyage to India. Nervo-sanguine temperament.

Admitted 26th July 1852, at 4 o'clock P.M., complaining of moderate constant pain under margin of liver, towards right side, and dragging pain in navel coming on at times with such severity as to make him writhe. Abdomen soft, and he relaxes it by keeping up his knees. Pressure is borne well except over right hypochondriac and umbilical regions, where touching firmly causes him great uneasiness. On pressing deeply, gently and firmly in the former region, a soft tumour can be detected, commencing about 3 inches from edge of liver and extending up under its margin. It imparts the feeling of a stocking folded with in itself (or rather of the doubled in end of such a stocking). The right iliac region seems to be unusually soft and empty. His general appearance is one of much suffering and resembles that of a hernia case, only there is no protusion of the kind. Skin temperate and bathed in perspiration, especially over face and trunk; constant attempts at vomiting which he tries to encourage by putting his finger in his throat. Frequent attempts to empty the bowels, but nothing is evacuated. Almost constant cramps in legs, feet, thighs and arms; pulse 130, soft, weak; respiration hurried and irregular; great thirst, which he endeavours to quench with water, but there is no urine, and there is no evidence of any in the bladder. He speaks only French and Spanish, and by help of a Spanish interpreter (a patient in same ward) we were informed that he became suddenly affected, when at the wheel on board his ship five days ago in the performance of his duty, with severe twisting abdominal pain, which obliged him to quit his work, and soon after made him vomit and go to stool. The vomiting with retching has continued ever since. The vomited matters were at first food, then yellow fluid, but have not been stercoraceous. His urine has been almost completely suppressed from the outset of the attack.

6½ P. M.—T. Opii. ℥ xl.

Water ʒss. *m.* now as a draught.

9. P. M.—An attempt was made to throw air into the intestines by means of the stomach pump, and next by the Humane Society's bellows borrowed from the Medical College, but

failed from the imperfection of the instruments. Air was then steadily blown in by the mouth of the operator through a stomach pump tube. The air at the very first puff met with great resistance, and even after blowing steadily and firmly for 20 minutes, only the left side of the abdomen was distended. By steady firm blowing, however, for more than half an hour, the form of the abdomen gradually became symetrical, from both sides being equally distended, and the efforts of the gut to expel the air became very strong and determined: the air, however, was retained about 10 minutes longer and then allowed to escape gradually. About half an hour after the cessation of inflation he got up to the close stool and passed about six ounces of clay colored, creamy, feculent fluid like thick chyle.

When examined half an hour after the stool, when all distension from air had subsided, the hypochondriac tumour was found to have disappeared. He was now easy, with the exception of a considerable abdominal soreness; and the pulse had fallen a few beats and become fuller; the respiration regular, and the skin dry and warmer. No urine has yet passed. During the injection of air, chloroform with alcohol was administered by inhalation to relieve his sufferings and prevent the powerful expulsive action of the abdominal muscles; but it failed of its usual effect; and, though given to the extent of ℥ iii., served to excite rather than soothe him.

Twenty drops of laudanum to be administered every 2d hour till he sleeps soundly.

27th.—6½ A. M.—Rested pretty well, and has had another liquid feculent stool, exactly like the first, but in larger quantity. Pulse 120, soft, weak, tending to irregular; slight pain in centre of abdomen, increased by pressure; constant hiccup and restlessness; no retching; skin warm and moist; tongue whitish; less thirst; very little urine yet, and that very dark.

℞. Ext. Colocynth Co. gr. iii.
Calomel gr. ii.
Ext. Hyoscyami gr. i. *m.* ft. pill. 2.
Every 3rd hour.
Fomentation to abdomen.
1 pint chicken broth to be taken slowly.

12th.—Noon—Has slept well since last report; looks refreshed, but complains very much of inability to pass water; only a few drops come at a time, and they scald him very much.

One full, liquid, slate coloured, creamy stool since last report. Pulse 100, soft, of better strength, inclined to intermit; very little thirst; scarcely any uneasiness in abdomen.

Pass No. 10 Catheter now.
Cont. pills.
Repeat broth.

Vespere.—Another small liquid, feculent evacuation. No pain; no retching; no nausea; rests comfortably. Pulse 100, soft, of fair strength; was much relieved by having six ounces of dark acrid urine removed by Catheter.

Omit pills.
℞ Pil. Hydrarg. gr. xv.
Opii. grs. iiss. *m.* ft. pill. 2 statim.
Repeat soup.

28*th.*—Slept well and feels very comfortable. Pulse 84, soft, of good strength; tongue rather white; some griping pain occasionally; no thirst; no stool during night; passed a little urine easily.

Foment abdomen.
2 pints chicken broth extra.

29*th.*—Complains still of a little pain in right side of navel, but is well in other respects. Pulse 84, soft, regular; bowels moved moderately last night, stools soft and formed.

29*th.*—*Vespere.*

℞. Tinct. Opii. ♏ xxx.
Aquæ ʒ i. *m.* stat.
℞. Ol. Ricini ʒ ss.
Tinct. Opii. ♏ x. C. M. S.

30*th.*—Had much griping yesterday forenoon from bilious, liquid stools coming down; well in other respects: this morning the stools are bright, green liquid and feculent, though the oil has not had time to operate, but there is no griping; pulse and tongue normal.

8 oz. bread extra.

1*st August.*—Quite well; stools still rather soft and unformed, and partly dark and bilious, but are returning to their proper appearance. Pulse slow, and of good strength, No complaint.

3*rd.*—Is quite well.

Discharged.

Dr. Young, in his "Introduction to Medical Literature," page 381, says, in speaking of this disease, that it is "seldom to be positively ascertained during life." As he gives references to nearly all the well authenticated cases down to 1813, his opinion is of great value. A more practical physician, Dr. Barclay of St. George's Hospital, London, speaking of Ileus and Intussusception, remarks that "Physicians of the largest experience and most comprehensive judgment have failed to deduce from the symptoms indications which can be regarded wholly trustworthy as to the nature of the disease."* And Dr. Thomas Watson, who is equally practical, observes, "It is seldom that we can discover, during life, what is the exact nature of the mechanical obstacle: but I have observed this peculiarity in most of the cases in which I have known it produced by intussusception, that after severe and sudden symptoms of obstruction and inflammation, *blood* has been passed by stool."† These opinions expressed by men so eminent may well lead me to be any thing but positive as to the accuracy of my diagnosis in the above case, especially as there is no note in it of the passing of blood. But, admitting this to be a defective point in the case, we must remember that no single case of any disease exhibits all the symptoms which are appropriate to various cases of the same affection; and if any one case is strong in some two or three pathognomic features, it will afford proof enough of its nature without the presence of some one or two other symptoms which would be absolutely necessary to establish the nosology of another instance. In the case of the seaman Michael the presence of blood was not needed to indicate with greater certainty what was indicated with almost absolute certainty by the tumor in the abdomen, the history of its appearance, the vacuity in another part of the abdomen, the slow disappearance of the tumor under the treatment finally adopted, the restoration of the symmetry of the abdomen and the cessation of all the distress and sinking. Indeed, this case, by the various results of the inflation, affords better proof of the actual nature of the malady present than almost any cases which have been declared to be instances of intussusception without the radical test of a post mortem examination. Even the illustrative case recorded by Dr. Watson, at page 496 of

* A Manual of Medical Diagnosis. By A. W. Barclay, M.D., p. 460.

† Lectures on the Principles and Practice of Physic, by Thomas Watson, M.D., 1857, Vol. II., p. 462.

his second volume, and which I shall soon have occasion to quote, affords fewer pathognomic indications of intussusception; none, in fact, except obstinate intestinal obstruction and discharge of blood and mucus, indications which may point to other forms of occlusion. Again, no case could have the solid fulness of one part in better contrast to adjacent vacancy than the present; and more importance should certainly be allowed to this symptom, which is so positive in its meaning, than to the appearance of blood and mucus, after obstinate paroxysms of colic pain with obstruction, with or without inflammation. Dr. Barclay, in his work already quoted, places much reliance on this sign. "One or two points," he says, "afford occasional aid in determining the position and character of the obstruction. If the point at which the pain is felt be also that at which we can trace the transition from a distended to a collapsed and empty state of the canal, we may feel pretty sure that this is the point of obstruction: the condition of the colon, which through its whole extent is comparatively fixed and immoveable, especially demands examination with this view. Both symptoms however are apt to be indefinite—the pain extending over the whole abdomen—the relation of the distended portion to the rest of the intestine not to be recognised; and this is especially true when the small intestine is affected."* There is, in fact, only one other sign of invagination which can be more certain, and that is the intussuscepted part descending so low, when the invagination occurs in the colon, as to allow it to be touched by the finger. This, however, can occur only in young children.

The cause of the attack in the present case can only be conjectured. No clear light has yet been thrown upon the origin of any of the recorded cases. Mayo, in his "Outlines of Human Pathology," after remarking that "the cause of intussusception has not yet been made out very satisfactorily," adds—"In the bodies of infants, in whom there is no abdominal disease, partial invaginations of the bowel are often met with; and no doubt, through the lively peristaltic action of their intestines, frequently, and are again drawn out and righted. In a preparation of the small intestine of an adult, belonging to Mr. Ceasar Hawkins, an invagination of a few inches of the jejunum is preserved, which had been brought on by the irritation of a tænia lumbricoides, which

* Barclay's Manual, p. 462.

adheres to the inverted part."* In the case now under consideration there were no signs of intestinal worms of any kind. Sailors, indeed, are, as a class, like all eaters of highly salted food, singularly free from parasitic infestments. Rheumatism, to which sailors are very subject, and with which Michael was in all probability occasionally affected, was most likely the predisposing and constipation, the normal condition of most seamen, the immediate exciting cause. When dissecting intestinal coats, we know that a cork placed inside simplifies our examination very considerably. When the cork fills the intestine a free portion is easily everted over the part which is plugged, or, in other words, the plugged part is readily turned into the free division, and all the more readily if the latter division contain a modicum of air. Invagination of intestine may, therefore, be very quickly occasioned during life when there is inspissated fœcal matter distending the bowel just above a part which contains a little air, provided sharp peristaltic movement be induced by a blood poison, as in rheumatism, or by any other agent.†

Mr. Thomas Ballard of London ascribes intussusception, when it occurs in childhood, to fruitless sucking.‡ Increased irritability of bowels occasioned by constant or temporary want of sufficient food, even in children who are apparently well fed, would probably account for the accession of

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* Outlines of Human Pathology, by Herbert Mayo, F.R.S., 1836, p. 315.

† Peyerus made the following experiment on a frog. "Having irritated the intestine of the animal in several different places, he observed it to contract at those places most violently, and to protrude its contents upwards and downwards wherever the relaxed state of the part would permit; by which means the contents were heaped together in different parts. Hence some parts of the intestine being dilated much more than enough, by reason of the great quantity of matter thrown into them, formed a kind of sac, which readily received the constricted part into it." Edin: Practice of Physic, &c., 1803, Vol. II., p. 403.

"The process of the formation of intussusception was ocularly observed by Dr. Eichstedt in a rabbit. A portion of the small intestine contracted itself quite closely, and continued sometime in this state; the upper part of the bowel then commenced strong peristaltic action, and soon afterwards the part beneath and contiguous to the contracted portion assumed an antiperistaltic movement. As the peristaltic was stronger than the antiperistaltic motion, the contracted portion became pushed into the part moving antiperistaltically. He witnessed five such intussusceptions, in all the process being the same; after some time they became loosened. In one the contracted portion was pushed a full inch deep, into the under bowel." Bouchut's Practical Treatise on the Diseases of Children, translated by P. H. Bird, F.R.C.S., p. 491.

‡ A New and Rational explanation of the Diseases peculiar to Infants and Mothers, 1860, p. 315.

the disease better than any mere act of sucking; or it may be still more simply and satisfactorily accounted for by increased irritability occasioned by poor diet, or the exhaustion consequent on the evolution of teeth. That increased irritability is a good deal concerned in the production of invagination, we have pretty good proof in the statement of Mackintosh, in the third edition of his work on Principles of Pathology and Practice of Physic, that after the publication of the first edition of his work, in 1828, he, to use his own words, "discovered ulcerations in the intestines at each intussuscepted part in every case which I have had an opportunity of examining."* That these ulcerations were formed prior to the involution of the intestine, we can scarcely doubt, knowing as we do how unlikely it is to occur in the short period, usually only three days in children, which elapses between the commencement of the attack and the occurrence of death, and how unfavorable the closely and evenly pressed condition of the intestine must be to the ulcerative process.

Twenty-four years ago, I assisted a highly esteemed medical friend, long since deceased, in making a post mortem examination of the body of a child, which had died with every sign of intussusception, after rather more than two days illness, when entering its third year. The inversion had commenced at the ileo-colic valve, where so many cases of invagination have their starting point, and the cœcum and ascending colon, with several inches of Ileum inside, occupied the left side of the transverse colon and the whole of the descending portion of that bowel, the cœcum resting close to the anus. I had the preparation for some months in my possession, and I wondered then at, and have often since been puzzled to account for, the rapid displacement of the greater portion of a viscus so firmly bound down as is the colon. Like many others who must have applied themselves to the consideration of this displacement, I did not allow sufficiently for the remarkable extensibility, which is one of the properties of the peritoneum, especially of those portions which form the mesentery and meso-colons, as it is of other membranes. We occasionally see an instance of a hernial protusion, as large as an orange, presenting suddenly in the groin of a previously sound individual, under some rapid misdirected exertion; and, in exposing such a hernia, we find

* Principles of Pathology and Practice of Physic, by John Mackintosh, M.D., third edition, 1832, Vol. I., p. 257.

the parietal peritoneum has been suddenly extended and pushed before it without incurring the slightest laceration. We know also that the peritoneum can be peeled without injury from the wall of the abdomen and pelvis by broad, firm application of the fingers in the operation for exposing the iliac vessels. The cases of floating kidney occasionally met with in practice, prove also to what still greater lengths short bands of the serous membrane can be extended by long continued gentle traction. In fact the peritoneum is a far more easily extensible membrane, notwithstanding its tenuity, than we usually suppose it, and offers little or no obstacle to the involution of intestine, especially in early life, after inversion has been fairly commenced.

When we come to speak of the treatment of this class of cases, it is saddening to think how much of the practice recommended to be employed, heroically or cautiously, has been of an aggravating rather than of a remedial nature. The medicines which have often been administered, and are still in some medical works recommended for administration, to overcome the obstruction and procure evacuations from the bowels, are too well known to require mention here. All of the Emetic and Purgative class can only increase the intussusception: none of them can withdraw the invagination. All of them must act seriously even in an indirect manner by lowering vitality and so increasing irritability. Only three remedies are really worthy of the name, viz.;—sedatives and enemata of tepid water, or air. Of the great value of sedatives in spasmodic and inflammatory diseases there cannot be the slightest question. The only advice ever required now-a-days is that they should be resorted to at the very commencement of painful signs of obstruction, and their employment not deferred till precious time has been lost in the administration of purgatives. Purgative treatment will, of course, always have some advocates with those who believe that the invagination may as often be passing upwards as downwards, but it will never find favor for a moment with others who have become convinced, like myself, that the upward involution is highly improbable in the great majority of cases.

Enemata of warm water sometimes afford very decided temporary relief, but very seldom lead to any permanently good result. They are often supposed to be required for the washing out of the bowel; but, in a genuine case of

introversion, the irritability of all the intestine below the inverted part becomes so great, almost immediately after the inversion occurs, that the feculent contents are rapidly cleared out. They have often been used as a means of finding, by the quantity of water that could be thrown up, at what part of the canal the obstruction is seated. But the irritability of the parts below the obstruction is sure to prevent the empty portion of intestine being fairly distended with fluid; and, after all, we are left to guess to what point the fluid may have been forced. In the few authentic cases in which the air enema has been fairly tried, it has been proved to be the surest remedy. It is believed to be a very ancient application in iliac obstructions. Hippocrates says, "In treating ileus when a glyster fails to relieve the bowels, they are to be inflated by means of a bladder attached to a pipe, and then the pipe is to be removed, and a clyster immediately injected, in which case, if the bowels admit the clyster, they will be opened, and the patient will recover, but if otherwise, he will die, especially on the seventh day."* The treatise "On Affections" in which this occurs is regarded as spurious by modern critics.

But the only efficacious glyster that can be administered by a bladder in the way of inflation must be air medicated in some way as by tobacco smoke, and even the great Hippocrates could not have brought the elasticity of air to bear on the descending bowel by any such feeble instrument. Hoffman and Haller are said to have revived this practice of the Father of Physic. In more recent times we find occasional though rare notices of inflation as a remedy. In 1803, it was noticed, but not approved of, in a work of considerable pretensions, "Other remedies are, the blowing air into the intestines, by means of a bellows, and the injecting glysters of the smoke of tobacco. But neither of these seem very capable of removing the disease."† In 1824, the late Dr. W. Maxwell of Dumfries in Scotland, published some "Observations on Constipation, with Cases,"‡ for the relief of which, among other remedies, he recommended inflation. The constipation in his cases, however, appears to have been kept up from some other cause than introversion, and Cop-

* The Genuine Works of Hippocrates translated from the Greek, by Francis Adams, LL.D., Surgeon. Sydenham Society. 1849, Vol. I., p. 85.

† Edinburgh Practice of Physic, &c., London, 1803, Vol. II., p. 407.

‡ Edinburgh Medical Journal, 1824, Vol. I., p. 72.

land in his article on Colic and Ileus, observes that, "it seems doubtful, whether or not invagination existed in any of them."*

Some years after, Mr. John King, Surgeon in Irvine in Scotland, drew attention again to Inflation,† but the case he published as recovered by that operation seems also to have been one of constipation from some other cause, most probably simple atony of the intestine. His article on the disease brought out some remarks on the same subject by my father, then, as now, practising in Dumfries. In his short paper he says, "About thirteen years ago [about 1818] I attended a child here whose bowels could not be moved by any of the agents usually employed in cases of obstruction, although there were no symptoms of inflamation till towards the close of the scene. Having obtained leave to examine the body, we could discover nothing to account for death but a very complete intussusception in the course of the ileum, and which immediately disappeared on inflating the bowels with the blow pipe. It instantly occurred to me that the same thing might have happened had the bowels been inflated from the rectum during life. I had shortly after an opportunity of communicating the circumstance to Dr. Johnson, the talented editor of the London Medico-Chirurgical Review, and in the number of that admirable work for April 1830, it is distinctly mentioned in an analytical article on Ileus."‡ My father then briefly states another case which occurred in his practice in 1818, and was believed by him to be a genuine case of intussusception successfully treated by inflation, but which, trying it by the tests afforded by more recent examples, must, like those of Mr. King, Dr. Maxwell and many others, not followed by post mortem examination, be considered one of simple atonic constipation.

The best case I have ever read of intussusception fairly treated by inflation is given, as I said a few pages back, by Dr. Thomas Watson. As it describes very neatly and succinctly what may be considered a good specimen of cases of this disease, for although signs of great diagnostic value are not noticed in it, they were most probably observed, I may quote it at length. "I was asked," writes Dr.

* Dictionary of Practical Medicine, Vol. I., p. 377.

† Case of Colica Constipata, Glasgow Medical Journal, 1831, Vol. IV., p. 77.

‡ On Inflation of the Bowels. By Archd. Blacklock, late Surgeon R. N. Glasgow Medical Journal, 1831, Vol. IV., p. 139.

Watson,* "one Sunday afternoon, by a physician, to see his little daughter, aged ten or eleven. On the preceding Tuesday she had gone to see the Queen open the Parliament, and was supposed to have caught cold there, for she began from that time to complain of pain in her belly. Some red discharge was reported by her nurse; and it was conjectured that this might be a show of commencing menstruation. However, she continued ill and in pain and her bowels refused to act. On Saturday there was a discharge of blood and mucus. Dr. West was then consulted, who found no marks of menstruation. The discharges had been from the rectum. Purgatives and ordinary injections failed entirely of their purpose. It was pretty evident that the child was labouring under intussusception. As a last resource, and with a faint hope of rectifying the mischief, it was proposed to inflate the bowel with air. This was done, about midnight, by Mr. Erichsen, by means of the bellows used by the Royal Humane Society for producing artificial respiration. With my hand placed on the child's left flank, I could feel as well as hear the air enter with a rush and a noise upon each action of the bellows. Its entrance gave her some pain. She said, "There"—"That will do"—"Oh don't," &c. The inflation was continued for some minutes, yet the abdomen did not become much distended. After it was over the patient seemed easier; and in about two hours she passed a natural fæcal stool. She got well without another bad symptom."

To render insufflation of any certain avail in the return of inverted intestine recourse should be had to the process as soon as possible after the real nature of the obstruction has been established. Even where the cause of the obstinate constipation is not clearly made out, we should remember that inflation is worthy of trial, as it *may* prove effectual even in internal hernia that worst of all the causes of obstruction, and has also acted most efficiently in relieving the bowels from atonic constipation resulting from large fœcal accumulations. In the latter class of cases the injected air finds a way where watery enemata cannot pass; and, by equably over-distending the bowel, provokes in a short time a corresponding degree of muscular contraction and expulsion; just as school boys make each other open their closed

* Lectures on the Principles and Practice of Physic, by Thomas Watson, M.D., Vol. II., p. 496.

hands, to show what is in them, by bending the hand forcibly on the wrist, so that the extensor muscles are stretched and stimulated to react and contract till they extend the fingers.

In a case of inverted bowel every minute adds to the extent and firmness of the impaction and diminishes the possibility of pushing back the intestine to its proper place. The younger the patient the greater the extensibility of the mesentery and meso-colons, and the more rapid the course of the involved intestine when inversion has fairly occurred. Mr. Bird in his translation of M. Bouchut's work on the Diseases of Children* quotes from the "Lancet" and "Gazette Medicale" of 1838 two fatal cases which occurred in children, one at the age of seven months, in which, at the examination after death, "the cœcum and ileum were observed invaginated in the rectum to the extent of nearly two and a half inches;" the other at the age of eleven months and three weeks in whom the "invagination was found to have commenced four inches from the lower end of the ileum," and "the invaginated portion had passed in the ascending colon conjointly with the cœcum and through all the transverse and descending colon to the sigmoid flexure." Each of these cases had lived three days after the intussusception occurred, and the leading extremities of the invaginated parts must have reached the low positions in which they were found some hours at least before the cessation of life. In a most instructive case which occurred to Mr. Ballard in a child of six months, and which is extremely well narrated at page 53 of his little book, already noticed, "the ileum was found to terminate in the descending colon, which was puckered, and, together with the rectum was distended to within two inches of the anus with a volvulus consisting of a portion of the ileum and the whole of the superior part of the large intestine." Death had occurred on the fifth day. The child at whose post mortem examination I assisted, as I previously mentioned, died on the third day, and the cœcum was found close to the anus, and had most likely attained that position on the second day. The progress of the invaginated portion is slow in adult cases compared with what it is in those of children. Still it is alarmingly rapid. Mayo in his outlines of Pathology

* Practical Treatise on the Diseases of Children, translated from the French of M. Bouchut, by R. H. Bird, F.R.C.S., 1855, pp. 493, 494.

quotes at page 314 a case which was published by Dr. Abercrombie, in which "about three inches from the lower extremity of the ileum there began an inversion of the intestine to such an extent, that more than eighteen inches of the ileum had passed into the cavity of the caput coli." The patient was a woman aged 32, and this displacement had been effected in five days. In the case with which I have commenced this communication the cœcum and a portion of the ileum were lodged, so far as I could ascertain, in the transverse colon, and they had arrived at their new position in five days. If insufflation, therefore, or any other supposed remedy, is to be allowed a fair field for service, it must be brought to bear within a few hours at the utmost after the commencement of the signs of invagination, especially in cases of children.

Every inch that the intestine is drawn in not only adds to the difficulty of forcing it to retrogade, but leaves less room for the operation of a column of air when insufflation is attempted—and its employment will certainly end in failure if the invaginated part is past the middle of the colon; for the column of air, to have any decided effect when the inversion is at all wedged, must be at least as long as the inverted portion of intestine. Indeed, my impression has always been, since the time I attended Michael, that, had the inversion in his case been even an inch longer, I should have failed to move it in the least.

The cases of young children who have recovered after many days persistence of constipation cannot have been cases of introversion. "The prognosis of invagination of the intestines in young children is extremely serious; from the time that the lesion presents an obstacle to the course of the fæces, it rapidly becomes fatal. In the adult, there are many cases which recover, but most of infants attacked with it die"* But even Bouchut who had seen so much of this disease in children believed that it sometimes terminated in resolution. For he says again, "amongst other children the disease lasts a much longer time, but the vomitings gradually cease, the intestinal hemorrhage disappears, the strength returns, and the health becomes restored again, without the expulsion of fragments of the intestine."† This pleasant

* Bouchut's Practical Treatise on the Diseases of Children, translated by Bird, p. 495.

† Bouchut by Bird, p. 493.

termination however must be of remarkably rare occurrence, for we know well that a very slight nip to an intestine is almost necessarily fatal unless very soon relieved, and we also know that invaginations almost invariably occasion death, even where the invaginated part is so little pressed on that the passage of fœces through the inverted tube proceeds almost as usual. A case in proof of this is quoted by Mr. Ballard* from the "Transactions of the Pathological Society of London." A child four months old had constipation with symptoms of invagination of intestine for three days. Then the action of the bowels was restored and the child progressed favorably for three weeks, when obstruction with vomiting and other symptoms returned. At the end of three days the action of the bowels again took place. After twenty-four days from that period a portion of the bowel protruded at the anus and increased in length till six inches were found down. This intestine sloughed, and the child died nine weeks from the commencement of the attack. "On post mortem examination, the intussuscepted portion was found to consist of small intestine (the lower part of the ileum), which had been protruded along the ascending transverse and descending colon and eventually from the anus. A probe passed along the intussuscepted portion showing it to be pervious; its calibre, however, was much diminished, being about one third of an inch in diameter; and it communicated with the intestine below by an orifice of the same size; its canal was occupied by a small quantity of yellow feculent matter mixed with mucus." In short, a genuine intussusception which can enforce constipation for several days is not likely to terminate in a quiet retracing of its progress either with or without help from inflation. "If death does not result from the peritonitis, the ensuing gangrene or the strangulations, recovery takes place with one of the three following terminations to the morbid process:—*(a)* complete adhesion having been formed between the two opposed serous surfaces of the sheath, and the inverted tube at the point of inversion, the whole contained volvulus mortifies and is thrown off, and becomes discharged per anum. In a case referred to by Andral, the portion of intestinal tube thus evacuated measured eighteen inches; and Hévin relates two cases, in

* A New and Rational Explanation of the Diseases peculiar to Infants, by Thomas Ballard, M.R.C.S., &c., pp. 51-52.

one of which twenty-three inches of the colon were thus parted with, and in the other twenty-eight inches of small intestine. An annular swelling, more or less interfering with the canal of the intestine, is found in the corpses of persons in whom this termination has occurred, besides adhesions of the serous surfaces in the vicinity. (*b*) In rare cases, in which the incarceration has been developed at an unusual point, only a partial sloughing of the volvulus takes place; and the portion which lies above the strangulation is retained. Under these circumstances the latter forms a conical plug with a narrow channel, and projects into the cavity of its sheath, surrounded by a thick fringe of mucous membrane. *(c.)* Occasionally, after adhesion has taken place, the inflamation abates and the volvulus is retained. The first mode of termination is the only one that produces a permanent recovery"* These however are, at the best, but sorry terminations; and every endeavour should be made to cut short the disease at the very earliest period by persistence in the exhibition of sedatives, for they make a good impression in time even when often vomited, and by steady careful trial of insufflation.

Inflation may yet be proved of some value for the relief of incarcerations of bowel by bands of old formation or by loops formed by adhesion of the tip of the appendix vermiformis to mesentery or small intestine. It may even be advisable to try its effects when there is a suspicion of obturator or other small but not easily diagnosed hernia. I have found it very useful in several cases of inguinal hernia which could not be relieved by taxis. The following is an instance :—

Meer Davood Ally, æt. 35, nervous temperament. Admitted 4th August 1852, 7 P. M., with incarcerated scrotal hernia of right side. Has had it about five years and has always been able to return it himself till to-day, when it came down at 2 P. M., filled the scrotum and could not be replaced. On his admission a steady attempt was made to return it by taxis, but failed. His pulse was slow and feeble and his appearance irritable; he had slight dragging pain at navel; bowels said to be open; skin cool; tumour bore handling well, and was cool and soft. At 9 P. M., having failed to bring him under the influence of opium, though given in full dose,

* Rokitansky's Account of these changes condensed in Manual of Pathological Anatomy, by C. H. Jones, M.B., F.R.S., &c., and E. H. Sieveking, M.D., &c., 1854, p. 518.

he was subjected to chloroform; and, after being brought pretty fairly under its influence, air was blown into the rectum in the hope that if the large intestine were the part incarcerated the tension would draw it back. After blowing strongly a few minutes the hand was placed on the hernia and it receded immediately with a gurgling noise. A compress and bandage were then applied, and a full dose of Tinct. Opii. administered.

5th.—Slept well; looks refreshed; bowels were open twice yesterday before hernia came down.

Half diet.

6th.—Well, discharged, with a compress and bandage.

At the time this case was written I was not quite certain that air could be blown upwards through the ileo colic valve during life, so as to inflate the small intestines. Since then I have found that air can be rapidly forced into the small intestines from the rectum during the presence of rigor mortis, and therefore it may be considered tolerably easy to inflate them during life. In Michael's case the abdomen was evenly distended by strong inflation, so that the small intestines must have been filled as well as the colon.

Art. XIII.—*Illustrations of Hepatic Disease, with Observations.* By Thomas Lowe, Medical Officer, Sappers and Miners, Dowlaishweram.

Acute Hepatitis.

Suppuration; Hepatic Abscess discharged through the Bowels; Cure.

Mrs. L., Æt. 36, continued residence in India 19 years, of spare frame, bilious temperament. On the 6th June, 1856, I was called in to attend this lady, who had been suffering from a complicated derangement of the stomach and bowels for some weeks past. I found her highly nervous, irritable, and desponding. Her face was sallow; conjunctivæ muddy; skin dry, harsh; tongue brown; her bowels were very irregular; evacuations lumpy and clay colored; urine scanty, hot and high coloured; she had constant nausea, and occasional vomiting. She had suffered from derangements of the uterine system for many years. She had distinct febrile

symptoms daily for some time past. Her pulse was 98, and small. On examining the abdomen, there was distinct fulness in the right hypochondrium and epigastrium; great tenderness on pressure from the margin of the ribs to the umbilicus, and as far upwards as the right breast. The recti muscles were very tense, deep inspiration caused acute pain along the margin of the ribs and downwards towards the right ilium.

Percussion elicited dulness of sound from the right breast to a line running diagonally downwards from the umbilicus to the os innominatum and across the epigastrium to the spleen. Gentle pressure over the space below the ribs discovered no nodules or fissures. The liver appeared hard, but smooth; the superficial abdominal veins were not enlarged. She had not been accustomed to lace tightly. This abnormal hepatic enlargement had been noticed for some days by the patient, who had complained of a feeling of *bloating*, but had attributed it to indigestion and constipation, especially as she often rejected her meals. Being accustomed to none but carriage exercise, she had rarely needed to take a deep breath, and on being told to do so, uttered a scream and surprise at the pain caused by thus forcibly pressing the diaphragm downwards upon the liver.

She had suffered for a long time from congestion of the hæmorrhoidal veins, and from burning of the palms of the hands and feet, the former often becoming deeply mottled and irritable, and covered with minute vesicles which burst, leaving the cuticle to peel off, and the palms and fingers very sore and wrinkled.

Ordered a warm bath.
Hirudines xviii; to the hypochondrium.
To be followed by a large blister.

℞ Hydrarg. Chlorid. gr. iii.
Pul. Antimonial. gr. ii.
Pul. Ipecac. Co. gr. v. in pul.
4 tis horis.

℞ Sodæ Carb. ʒ iss.
Potass. Bicarb. ʒ ii.
Acid Hydrocyanic dil ♏ xl.
Aquæ ad ℥ viii.
Mix. Dos. ℥ i. tertiis horis.
Lime juice drink ad libitum.
Diet; slops.

7th.—The leeches and blister have relieved the pain and tenderness. She breaths easier. Skin still hot and dry; hands burning hot; pulse 100; tongue dry; thirst excessive; feels much nausea; bowels not moved; urine scanty and high colored; did not sleep all night.

Blister to be dressed with savine ointment.

Continue Omnia Med.

℞ Magn. Sulph. ʒ vi.
Pul. Aloës gr. x.
Inf. Sennæ ad ℥ x.
Decoct. Oryzæ Sat. ad ℥ xxx.
Mix Enema statim injiciend.

Vespere.—Has had three large and very offensive evacuations, the first and second very lumpy and frothy, the third like liquid pitch with a green hue. Skin somewhat moist; pulse 100; thirst very great; has had several sharp pains in the liver.

Continue Omnia.

8th.—There is a look of deep anxiety in the patient's countenance; she has had no sleep; is very feverish; skin harsh and burning hot; pulse 120; says she felt a great "*chill*" twice last night, and *shivered* a long time; nausea and vomiting very distressing; vomit very bitter; bowels again constipated.

Pressure three inches below the ribs towards umbilicus induced exquisite pain; general tenderness somewhat increased.

Omit Pul. et. Mixt.

℞ Ammon. Carb. ʒ i.
Potass. Bicarb. ʒ iss.
Acid Prussic Dil. ♏ xl.
Vin. Ipecac. ʒ iss.
Aquæ Camph. ad ℥ x.

Mix. Dose ℥ i., every 3 hours with lime-juice, in a state of effervescence.

Pul. Jacobi. gr. ii.
Pul. Opii. gr. ¼.
In Pul. ter die.
Repeat the enema.

Diet—Beef-tea, jelly, milk.

Vespere.—Pulse 100; skin cooler, but dry; nausea lessen-

ed; bowels acted four times, stools variegated, and offensive.

To take a drachm of Tinct. Hyoscyam, in camphor-water at bed time.

9th.—Had a few hours sleep last night; feels easier, but respiration is troubled, and the least motion in bed is attended with pain in the liver, nausea, and faintness. Pulse 100; skin moist, but very hot; tongue cleaner; thirst less; bowels open once, stool pale, frothy; urine more plentiful.

Continue Omnia Med.

Nourishment to be given frequently in small quantities at a time.

Vespere.—Much the same.

Continue.

10th.—The patient has wasted much; she is a mere skeleton; she appears very anxious; pulse 110, small; breathing easier; she can bear palpation over the liver better; nausea is less distressing; bowels not open.

Continue medicine.

Repeat enema.

Vespere.—Feels a little better; enema caused two offensive pitchy stools, and she felt relieved much after the operation.

Continue medicine.

11th.—Had much fever again last night; did not sleep; felt a burning pain in her side for an hour. Pulse 120, small; skin dry and hot; tongue brown, dry; bowels open once to-day, stool very dark, bright-coloured viscid bile; tenderness on palpation as before; a deep breath causes great pain.

Continue Omnia.

Vespere.—An hour after morning visit the patient felt suddenly called to stool, and then passed a copious motion, which scalded the rectum considerably; after this she felt much relieved. I found her skin cool and moist; thirst less; no nausea; pulse reduced to 98 and fuller; the volume of the liver decidedly lessened, as also the pain on pressure.

On examining the motion I found it consisted of an abundant discharge of pus, mucus, and inspissated bile.

During the day she had six stools, each of the same nature.

Omit Pul.
Cont. Mixt. Alk.
℞ Tinct. Opii. ♏ xl.
Sp. Æth. Sulph. ʒ ss.
— Ammon. Co. ʒ i.
Aquæ Camph. ℥ i.
M. f. haust. h. s. s.

To take sherry-wine with soda-water for a drink. Beef tea, or chicken tea, and milk frequently.

12*th.*—Has had a good night, but she feels much prostrated. Skin is warm and moist; pulse 100; feels less pain in the side; bowels open, stools loaded with pus, and bright bile.

℞ Ammon. Carb. ʒ i.
Sp. Æth. Sulph. ʒ iii.
Decoct. Cinchonæ ad ℥ xii.
M. f. Mist. Capt. ℥ i. tertiis horis.
Pul. Jacobi gr. ii.
— Opii. gr. ¼ in pul. ter die.

Repeat Haust. Sed. h. s. Wine and soda-water, and meat teas as before.

13*th.*—Had a good night; pulse 95, fuller; no fever; breathes more freely; pain much less; hepatic dulness less extensive; bowels open, stools of same nature.

Continue Omnia.

14*th.*—Looks better; has passed a good night. Pulse 95; skin moist; tongue almost clean; bowels open four times, stools liquid with a little pus.

Continue Omnia.

15*th.*—Better. Slept well; wishes for more food; pulse 90, stronger; tongue moist; bowels well open, stool very scalding. Palpation gives less pain in epigastrium and side, can take a deep breath with only slight pain; volume of liver much diminished.

Continue medicine.
Diet same, with a sago pudding.

16*th.*—Improving; had several free bilious stools, no pus noticed; volume of liver much diminished, bears pressure

better; breathing free; pulse 84, soft, full; asks for more food.

Continue medicine.

To have an egg with other food.

17*th.*—Doing well.

19*th.*—Since last report the patient has been improving slowly. Side still tender on firm pressure over the liver; bowels open, stools becoming natural; appetite good.

Omit former medicine.

℞ Acid Nit. dil ʒ iss.
— Hydrochl. dil ʒ ii.
Ext. Taraxaci ʒ iss.
Sp. Æth. Nit. ℥ ss.
Inf. Gentianæ ad. ℥ xii.
M. f. Mist. Dos. ℥ i. ter die.

℞ Ext. Fellis Bov.
Sapon. His. āā ʒ ss.
Pil. Aloës c̄ Myrrh. ʒ i.
M. f. Pil. xxiv. Capt. pil. ii. Om. n.

To have a mutton chop for dinner.

22*nd.*—Patient gradually convalescing; appetite good; functions natural; there is still a sense of *tightness* in right side, but no pain.

Continue medicine.

To have the side, from the breast to the epigastrium and navel, painted with iodine paint morning and evening; and to have a nitro-muriatic acid warm pediluvium every night at bed-time.

27*th.*—Since last report she has improved much. She is able to go out in her carriage, and sit up for the better part of the day.

A long sea voyage round the Cape to England was now recommended, as the patient had been in the tropics without change nineteen years.

This the patient took in due time, and regained her health.

2. ACUTE HEPATITIS.

Suppuration; Abscess discharged through the Bowels; Hydatids; Recovery.

Mrs. K., Æt. 32, the widow of a warrant officer, born in India, the mother of three children.

A short time after the death of her husband, this patient complained of constant headaches, nausea, heaviness over

the eyes, weariness, languor, pains about the stomach, constipation, and loss of sleep at night.

9th September 1858.—To-day she sent for me, having had burning fever all night, and repeated attempts at vomiting. I found her skin hot and dry; pulse 100, hard; tongue brown; thirst great; she could not lie on her left side; had a persistent pain beneath right shoulder; bowels had not been moved for four days; urine hot and high colored. She also said she had severe pain just below the right false ribs. There was no jaundice. There was a distinct globular swelling of the abdominal walls in the right hypochondrium; great heat over this tumour; the liver was much enlarged and distended the lower part of the chest; palpation could not be borne well. Yet I could ascertain the existence of fluid within the tumour, which did not appear to have formed any adhesion with the abdominal wall.

An aloetic enema was ordered to relieve the constipation.

℞ Pul. Jacobi gr. ii.
— Ipecac. Comp. v. in pul.
ter die sumend.

℞ Sodæ Carb. ʒ iss.
Ammon. Carb. ϑ ii.
Acid. Hydrocyanic dil ♏ xl.
Inf. Gentianæ ad. ℥ x.
M. f. Mist. Dos. ℥ i. 4 tis horis c̄.
Acid. Tart. gr. x.

10*th.*—Enema acted freely, and caused an evacuation of dark coloured scybalæ, followed by two liquid frothy stools. She has less fever; in other respects the same.

Continue medicine.

11*th.*—Had a restless night, pain in side worse; nausea increased; bowels not open; tumour has not increased in any way towards abdominal walls, nor is it yet adherent.

Continue medicine.
Repeat enema.
To have a glass of Port-wine twice a day.
Diet—meat teas, milk.

12*th.*—No better. Is becoming anxious; pulse 120, small; bowels well open, stools watery.

Continue medicine.

℞. Tinct. Opii. ♏ xl.
Sp. Æth. Sulph. ʒ ss.
Aquæ Camph. ad ℥ iss.
M. f. haust. h. s. s.

13*th.*—Patient sitting up in bed, looking much better: was called to stool about 2 A.M., and has been five times since. She has no fever, and the tumour has almost disappeared. On examining the evacuations, I found them made up of puriform liquid full of floating hydatids, tinged with bile. The echinococci were very numerous, and not only solitary, but in small globular masses; there were also many opaque yellowish masses of granules of an irregular form. The last evacuation appeared like minute fish spawn. These I examined with the microscope and found them to be echinococci.

℞. Ammon. Carb. ʒ i.
Tinct. Opii. ♏ xl.
Decoct. Cinchonæ ℥ x.
M. f. Mist. Dos. ℥ i. ter die.
℞ Pil. Saponis c Opio. gr. v. Om. n.

15*th.*—Patient doing well. Tumour in the side has quite disappeared, but there is still some hardness and tenderness in the right lobe of the liver. Bowels regular, stools liquid, bilious.

Continue medicine.

Iodine paint to be applied to the right side morning and evening. After this the patient made a rapid convalescence, and took a sea-voyage.

REMARKS.

How long this patient had been the subject of hydatids it is difficult to say. The sac that contained these acephalocysts had probably existed a long time, and it is possible that the hydatid tumour might have gone on developing as a pure and simple hydatid growth for years without even much injury to health. These acephalocysts are incapable of forming pus, for they are not nourished by blood-vessels, but in the long run by progressive development they may imperish life by pressure upon the cava or portal vein, or by bursting within the peritoneal cavity and inducing intense peritonitis.

In this instance the hydatid tumour suppurated, and the contents of the tumour were tinged with bile.

The patient's recent mental distress and suffering was, in itself, enough to induce suppurative inflammation in an organ so prone to derangement as the liver, especially taking into consideration the effects long application of tropical heat induces. That an hepatic duct in the walls of the sac gave way, and that bile was poured into it, and induced

rapid suppuration cannot be doubted, for in no other way can we account for the bile colouring of its contents and the formation of pus within the sac, and its ultimate discharge with the hydatids, through the intestinal tube.

The adhesive inflammation between the sac and the intestine, rather than between it and the abdominal wall, was not peculiar; but the absence of any adhesion in the latter site quite precluded me from attempting to evacuate the abscess by trochar, even had I been so inclined. I awaited the efforts of nature, for I could not pronounce the tumour to be *hydatid* in the presence of the high fever, the severe pain, and the evidence of suppurative inflammation. I have reason to believe this tumour was of recent date, as the sac appeared very elastic, and after its contents were discharged, it evidently closed up rapidly, since which the patient has enjoyed fair health up to this period.

A slowly formed globular tumour, accompanied with little pain, no fever or much constitutional disturbance, in the absence of jaundice or ascites, may be diagnosed as a hydatid tumour; but where high fever, severe pain, sleepless nights, and great systemic disturbance coexist, we must suspect suppurative inflammation of the gland. Such complications must always render our diagnosis guarded and of doubtful character.

The treatment adopted in this instance was simply antifebrile and supportive.

I cannot advocate puncturing such tumours; the dangers are many and serious, and, from my personal experience, puncture is not to be recommended.

3. Acute Hepatitis.

Suppurative Inflammation; Discharge of Abscess through Abdominal Wall; Recovery.

Corporal Mc. D., Æt. 31, Sappers and Miners, temperament bilious, habits reputed temperate, residence in India three years.

10*th October*, 1859.—Admitted with symptoms of dyspepsia. Face pale and patchy; pulse 90; tongue very foul; constipation; has no pains in side.

Alteratives and purgatives ordered.

4*th November*.—Discharged to duty.

29*th.*—Readmitted complaining of debility and pains about loins and hips, knees, and ankles.

℞. Pil. Alterativ. and Alkaline Tonics ter die.

7*th December.*—Has severe pain in epigastrium; cannot lie on his sides; looks anxious; pulse 100, hard, full; tongue brown; there is much tenderness on palpation; hardness of the right rectus, and fulness of the right intercostal spaces; no vomiting; no nausea.

Leeches xviii. to hypochondrium, to be followed by hot fomentation.

Mist. Alkal. Sed. ter die.

Grey powder and Dover's powder, of each 5 grains three times a day.

8*th.*—Pain less, still much fulness and tenderness; pulse 90, soft; tongue dry, great thirst; bowels open, stools *bright yellow.*

Continue medicine.
Repeat 12 leeches to the side.

9*th.*—No pain save when pressed; pulse 84, soft; bowels well open, stools natural.

Emp. lyttæ to the side.
Mist. Purgant. ℥ i. every three hours.

11*th.*—Pain returned; pulse 76; tongue brown; stools olive colored, frothy.

15*th.*—Much the same to this date; passes watery yellow stools; has had no rigors; no increase of pain; tumour in epigastrium steadily increasing in size.

Mit. Alkal. Anodyn. ℥ i. ter die.

19*th.*—Tumour rapidly increasing in size. It projects from the surface fully four inches; general fulness of intercostal spaces. Bowels well open, stools bilious; general health improving daily.

Nitro Muriatic Acid mixture three times a day.
℞ Quinæ gr. ii.
Ferri Sulph. gr. i.
Ext. Gentianæ q. s. in pil. ter die.
Beef tea one pint twice a day.

23*rd.*—Fluctuation distinct in the tumour; edges hard and easily traced.

25*th.*—Abscess pointing fast; integument becoming thin

and discoloured; general health as good as can be expected; sleeps well.

Tumour to be poulticed.
Port Wine ʒ ii. twice a day; an egg.
Morphiæ Hydrochl. gr. ½ h. s.

11*th January,* 1860.—Integuments over abscess very thin, livid, and in one or two places the cuticle is raised. The tumour is very large, and the patient looks very anxious and pale. The circumference of the base of the tumour is 18½ inches, from base to apex 7½ inches.

14*th.*—Abscess has given away *by four or five small worm-eaten like openings,* and there is a constant escape of a thick sanious pus, of a chocolate colour, and now and then variegated with bile.

18*th.*—Up to this date the escape of pus has been constant and profuse, although from such small openings; to-day the abscess has sunk to the level of the ribs. General health continues good.

29*th.*—Integument has sunk to its normal level; there is no shrinking in of the intercostal spaces; the walls of the cavity of the abscess are contracting fast; the dense effusion around its base is being absorbed; discharge small in quantity. Patient in good spirits.

1*st February.*—Abscess has ceased to discharge. He has no pain, no tenderness.

27*th.*—Discharged well.

REMARKS.

This case presents several interesting pathological features of some importance.

In the first place this patient had been all through the hot weather campaign under General Whitlock, and with others must have suffered considerably from the continued exposure to the intense heat during that campaign.

A general hyperæmic condition of the liver would account for his dyspeptic symptoms on first admission, and this condition was doubtless intensified after he returned to duty by the habit of indulging in the *two drams* of *spirit* allowed each man daily. *Absence of rigors,* indicative of the formation of matter was peculiar. There was no reason to suspect ulceration of the stomach or duodenum; he had not suffered from dysentery; but his portal

blood had doubtless become vitiated by a deranged state of the mucous surfaces and the contaminated matters brought by the splenic vien. This man had bivouacked in the malarious jungles of Central India.

In this case the inflammation was confined to the lobular subtance of the liver; its peritoneal covering was free, until the adhesive inflammation was set up which conducted the abscess to the abdominal wall.

The *colour of the pus.* It was *chocolate, claret coloured, green and black,* as from streaks of clotted blood.

Dr. Budd* says, "this description is incorrect. In all the abscesses of the liver I have examined the pus was *white or yellowish,*" and he accounts for other observes "errors" by supposing that in all the cases in which the pus was of the colour I state, it had passed through the lungs—been "*expectorated.*"

The green colour I noted was owing to the quantity of bile mixed with the pus, this also Dr. Budd says he has not remarked; but Rokitansky notices the fact.

This patient passed bilious stools almost the whole time; his motions were never *clay coloured.*

He had no pain in the right shoulder, no tenseness of the right rectus muscle, and yet the abscess was on the convex surface of the right lobe of the liver. He had no cough, no vomiting; all these sympathetic disorders were absent.

Although the abscess was an enormous one, I believe much benefit was derived from the application of the *leeches* and *blister;* they probably prevented it becoming larger.

It may be thought that I caused the *patient's* sufferings to be protracted in not opening the abscess when it had pointed at the surface, and all doubts of adhesion with the wall were absent.

I think it is better to allow an abscess of the liver pointing through the abdominal wall to open of itself, for the following reasons—

1. Because of the inelastic structure of the lobular substance of the liver not permitting the cavity to contract when a free opening has evacuated the pus.

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* Diseases of the Liver, 3rd Edition, pp. 104—105.

2. Because air invariably enters when an artificial opening is made, and rapid decomposition of the pus takes place, and renewed inflammation of the walls of the sac sets in.

3. This renewal of inflammation and fever may end in gangrene, as I have seen, and may rapidly prove mortal.

4. Because when we leave this operation to nature, while we take every care to support our patient, she uses such gentle yet effective means of voiding the pus. The little apertures which form at the apex of the abscess never close up, and as the matter is always oozing out, air cannot enter, no decomposition takes place, no secondary fever sets in. The patient feels no shock from the loss of the matter which escapes so gradually, and as it escapes so nature closes up the walls of the sac.

This patient, moreover, was kept in a state of absolute repose.

4. Acute Hepatitis.

Suppurative Inflammation; Abscess discharged through the Intestines; Recovery.

E. M., Esq., Æt. 51, residence in India 8 years; bilious temperament, temperate habits.

6th December, 1862.—This patient complained of suffering from much fever, lassitude, and restlessness for several days. He thought he had taken cold. Had suffered from jungle fever a year ago. He was burning hot; his eyes yellow; face sallow and patched; skin very dry; pulse 90, full; tongue dry and brown; had pains in his loins, back, beneath right shoulders, and down the back of both legs.

His liver extends as far up as the right nipple and down to the right ilium, across the epigastrium to the spleen, and down to the umbilicus. Over this extent of surface it was excessively tender to the touch—more especially between the ilium and navel; his respiration was laboured and performed from the upper portions of the lungs only, deep inspiration caused very acute pain. Right rectus muscle very tense.

His bowels had been costive for three days; urine scanty, hot, and deep colored. *The palms of his hands were deeply mottled, very sore, as though he had been rowing, and covered with minute irritable vesicles.*

His only exercise for a long time had been an airing in the cool of the evening in a ton-jon.

Ordered, leeches xvi. to the right side, to be followed by a blister.

Haust. Purgant. ℥ iii. ss.
Calomel. gr. ii.
Pul. Opii. gr. ¼ tertiis horis.
Mist. Alkal. ℥ i. quartis horis.
Diet—Slops. Lemonade.

7*th.*—Passed a bad night. In all respects much the same.

Continue medicine.

8*th.*—About the same. Fever very strong.

9*th.*—Slept a little last night. Bowels well open, stool natural colored; skin cool; respiration easier; liver not reduced in volume, and very tender on palpation.

Blister dressed with savine oint.
Continue medicine.

10*th.*—About same; passed a restless night; skin very hot and dry; pulse 120; bowels open, stool scanty; urine pale.

Continue Mist.
Haust. Purgant ℥ i. every four hours.

11*th.*—Slept a little last night; fever continues; pain in back, chest, and above ilium same; no reduction in volume of the liver; bowels well open, stool natural in colour; urine pale, copious.

Omit Pul.
℞. Pul. Antimonial gr. ii.
Potass. Nit. gr. v.
Pul. Opii. gr. ¼ M. f. pul. ter die s.
Continue Mist. Alkal.

12*th.*—Much same.

13*th.*—Tenderness over the liver increased; fluctuation in right lobe over the ascending colon distinguishable and adhesion to wall; pulse 82, tolerably full; skin very hot; on dry; bowels not well open.

Continue medicine.
Hot bottles to the feet.

Meat teas, milk, and lemonade to be given frequently.

14*th.*—Same.

15*th.*—Is better to-day; fever much less; respiration far easier; pains in shoulder and back nearly gone; pains down the legs gone; bowels have been moved four times; he has discharged a large amount of pus mixed with bile and gritty dark green particles and flakes with each evacuation.

Pulse 84, full; body covered all over with bright petechiæ.

Continue medicine.

16*th.*—Passed a good night; much the same; continues to pass a good deal of pus.

17*th.*—About the same; stools loaded with bright bile and pus; tongue cleaner.

Continue.

Port wine—a wine glass full three times a day.

19*th.*—Much better; fever gone; hepatic tenderness greatly diminished; pulse 84, soft; bowels well open, passes much bile and but a little pus.

Omit medicine.

Ordered Nitro Muriatic Acid with Spirit of Nitric Æther and Inf. of Gentian three times a day.

Pil. Alterativ. Anodyn. ter die.

20*th.*—Although the extent of hepatic enlargement has diminished, and also the tenderness, there is still much swelling and pain below the nipple and epigastrium. Bowels well open, stools very acrid.

Ordered iodine ointment with croton oil to be rubbed in over this region, morning and evening.

Continue medicine.

21*st.*—Improving.

23*rd.*—Skin cool; pulse good; tongue clean; appetite good; bowels well open. Wishes to leave his bed room.

Continue medicine.

Mutton chop, rice pudding.

After this report the patient gradually convalesced, and left the station on sick certificate for a long sea-voyage.

REMARKS.

In this case and in number 1, we have two good instances of suppurative inflammation of the liver induced insidiously by the combined effects of intense heat and malaria. There can be no doubt that a miasmatic infection of the blood had contributed to a hyperæmic condition of the liver, which state in both instances, had been unnoticed by the patients themselves, until extensive inflammation resulting therefrom developed itself.

In this station,—which is an intensely hot one, and situated just above the banks of the Godavery and is surrounded by rice cultivation and, therefore, miasm—hepatic affections are very common, and these are developed so slowly and insidiously that their existence is not known until severe structural changes in the organ manifest themselves, and then they run a rapid and often fatal course.

The patient in No. 4 like the one in No. 1, had taken no exercise for a long time. He had, perhaps, not filled his lungs properly for many months, hence respiration had given him no pain, which it must have done, had he once breathed deeply. The transition from the chronic to the acute disease often appears rapid, but *the burning mottled hands* and feet, the irritable temper, the capricious appetite, the languor, and constant ferverishness, and the frequent settled growing pain in the shoulder and back, are all pathognomic signs of the changes going on in the liver which an attentive observer at once recognises.

The fever may be from time to time of a continued, or intermittent type, and the patient emaciates slowly, becomes sad and desponding; the face becomes pale, cachectic, and patched; sometimes there is jaundice, followed by anasarca and ascites, intestinal catarrh, bilious diarrhœa, and dysentery.

When we observe such symptoms, it is our duty to recommend a change of climate; it is wrong to wait until a patient is *in articulo mortis*, for the ablest physician cannot always steer a shattered bark through the storms of such disease, and if he does so under Providence, his patient still requires the change which *may* be of small benefit to the irreparably injured constitution.

ART. XIV.—*Note on the Verdicts returned by Coroner's Juries in Madras in* 1861-1862. By THE EDITOR.

WE are indebted to the courtesy of Dr. Urquhart for an opportunity of examining the returns submitted to Government in the above subject. Such returns can only be of value if an accurate knowledge has been previously arrived at as to the actual population residing within the limits of the Supreme Court, beyond which the jurisdiction of the Coroner does not extend. As some steps have been taken to arrive at approximate conclusions in regard to this latter subject, (as we have recorded in a later page of this volume) we may before long be able to estimate how far death arises, in Madras, from preventible causes. Before however, alluding to this subject, we may reproduce the tabular statement which has been recently submitted to Government: but this, in the absence of a detailed account of the more interesting classes of cases, can only afford ground for a few observations.

A Comparative Statement of Coroner's Inquests held in Madras during the years 1861 *and* 1862.

	1861.	1862.	Increase.	Decrease.
Homicide.				
Murders	2	2	0	0
Manslaughter	1	1	0	0
Felo-de-se.				
Drowning	7	7	0	0
Hanging	2	2	0	0
Stabbing	0	1	1	0
Suicide while temporarily Insane.				
Drowning	15	13	0	2
Hanging	1	1	0	0
Accidental Death.				
Drowning	28	35	7	0
Burning	4	7	3	0
Boat forced against deceased	0	1	1	0
Fall of a tree	1	0	0	1
Fall of a pole	2	0	0	2
Fall of a building	2	0	0	2
Fall of a mud wall	2	0	0	2
Passage of a carriage wheel	5	1	0	4
Do. of a Railway carriage wheel	3	3	0	0
Do. do. truck	0	1	1	0
Fall from a height	3	2	0	1
Boat pressing on the deceased in the surf	0	1	1	0
Boat breaking in the surf	3	0	0	3
By the breaking of the balance beam of picotta	0	1	1	0
Iron rail falling on deceased	1	0	0	1
Fall from ship's yard	0	1	1	0
Knocked down by horse	1	0	0	1
Fracture of skull by falling against a plank	0	1	1	0
Do. by striking against the bucket of a well	1	2	1	0
Do. of arm by being drawn by a strap against a pulley	0	1	1	0

Accidental Death—(Continued.)	1861.	1862.	Increase.	Decrease.
Yoke of a bullock cart striking	1	0	0	1
Gun-shot wound	1	1	0	0
Lock-jaw from wound	7	3	0	4
Concussion of the brain	0	3	3	0
Suffocation	0	3	3	0
Death from Natural Causes.				
Disease of the heart	9	5	0	4
Diarrhœa	5	9	4	0
Apoplexy	2	4	2	0
Inflammation of bowels	0	1	1	0
Cholera	10	6	0	4
Retention of urine	1	0	0	1
Epilepsy	2	2	0	0
From exhaustion produced by leprosy.	0	1	1	0
Abscess of the liver	1	1	0	0
Fever	4	5	1	0
Dropsy	2	5	3	0
Disease of the lungs	3	6	3	0
Dysentery	2	2	0	0
Debility	0	1	1	0
Congestion of the brain	1	0	0	1
Do. of the lungs	0	1	1	0
Death from Violence, Causes unknown.				
Injury to brain	1	0	0	1
Fracture of the skull	0	1	1	0
Inflammation of womb	0	1	1	0
Wound of the leg	0	1	1	0
Miscellaneous.				
From poison	0	1	1	0
Wound of tongue inflicted in performance of a vow	1	0	0	1
Shark bite	2	0	0	2
Snake bite	2	3	1	0
From the bite of a mad dog	0	1	1	0
Excessive drinking	1	0	0	1
Wound inflicted by a cheeta	2	0	0	2
Want of common necessaries of life	1	1	0	0

	1861.	1862.	Increase.	Decrease.
Causes Unknown.				
Found Drowned.....	17	6	0	11
Do. Dead.....	8	8	0	0
Do. Hanging Dead	0	1	1	0
Total...	170	166	48	52

Total Inquests in 1861 170
Do. do. in 1862... 166

Decrease in 1862..... 4

(Signed) J. URQUHART,
Coroner.

MADRAS,
CORONER'S OFFICE, *January*, 1863.

As regards the foregoing, our attention is immediately arrested by the frequency with which "*Drowning*" occurs under the heads of *Suicide*, *Accident*, and *Causes unknown*. To the facilities afforded by open wells and unprotected tanks for the production of intentional or accidental death, public attention has been often directed both by the Public Press and by the Juries of the Coroner. But, little, if any thing, has been done to prevent these unhappy occurrences. Not only is the recklessness of life, always exhibited by Natives (to whom these returns almost exclusively apply,) not checked, but open wells are allowed to remain close to the roadside, and in populous neighbourhood, in a disgraceful state of repair.

That suicide is thus encouraged by the constantly present means for its being effected there can be no doubt: and if public fountains and pumps were substituted for the present dangerous and unsightly wells, incalculable benefit would result and a considerable economy of water would be effectually ensured.

That many of the Cases of drowning are purely accidental our own experience tells us—and if we have sometimes suspected that a good deal is set down to accident that is really due to crime, we are perhaps only applying to this country the same rule that is tacitly recognized in other countries.

But surely some means might be devised for rendering effectual aid to persons who are accidently imperilled in this way. Some years ago an attempt was made by the Government to introduce to public notice the admirable *method of restoring suspended animation*, devised by Marshall Hall, and translations of it in Hindustanee by Dr. Mudge were printed in several "Gazettes." But beyond this nothing was done. We would, if possible, have every Police Peon made fully aware of the still simpler method of Silvester, and this could be easily done by the several District Surgeons in Madras and the Zillah and Civil Surgeons in the Mofussil. Besides copies of the directions, which need not be more than a few lines in length, might be posted in each Tannah, and written in the several languages of the District.

Four deaths are found as resulting from the fall of buildings. We are only surprised that a much larger number is not recorded. The mode of construction of mud houses, and the loose and careless masonry in vogue among the inferior classes of houses in Madras, would appear to us as eminently calculated to cause a larger mortality from this class of death.

The breaking of a boat in the surf is quoted as productive of 3 deaths. Attention has been, not long ago, again forcibly directed to this cause of loss of life by more than one fatal accident of this nature. Any one accustomed to the imperfect repair in which these boats are kept can be little surprised at the occurrence of such accidents. Indeed, the chief wonder is that they are not of daily occurrence. Recalling the observation of a witty Divine on the probable result of the violent death of a Bishop from a Railway accident, we may perhaps hope that, should a *Member of Council* be unhappily lost to Society by a rotten Massula boat, some possible amendment in this regard might be effected by our local Legislative Council.

The frequency of Lock-jaw as a cause of death is perhaps worthy of notice as illustrating the tendency of this affection to supervene upon wounds in this country.

Among the natural causes of death, cholera heads the list. These deaths usually occur in the case of travelling beggars who, uncared for and unnoticed, die miserably by the roadside, or in the Native choultries with which the outskirts of our city abound.

In the other causes of death, there is little of peculiar interest.

We hope that in future years in noticing these returns we may be able to afford a brief abstract of some of the more important cases alluded to: but it would be impossible now to look up the scanty notices of these occurrences during the past two years.

The returns now before give us little more than a general idea of the nature of those fatal cases which come under the cognizance of the Law—but, as affording even this, they are of interest and worthy of record.

Art. XV.—*Remarks on the Operative Cure of Elephantiasis Scroti, Illustrated by Recent Cases in the Madras Hospitals.* By Howard B. Montgomery, M.D., F.R.C.S.I., Acting Surgeon, 2nd District, Madras.

During the past three years I have had the advantage of treating, and seeing treated by others, a good number of Cases of Elephantiasis, and I am anxious to record the experience I have gained in the operations required for its cure when the Scrotum is especially involved.

In the following cases whether treated by myself or others there has not, fortunately, been any casualty due to the disease, or the operation performed—although in one instance (that of the late Assistant Apothecary E——) death did actually occur while the patient was still under treatment. I may however anticipate so far as to say that his temperament and general tone of mind eminently unfitted him to cope with a severe attack of cholera of which disease he entertained a morbid dread.

One of my chief objects in recording the following cases, (all of which, with one exception, came under my direct professional care) is to suggest the cessation of any further attempts, on the part of operating Surgeons, to patch up artificial Scrota of hypertrophied skin—and to recommend the simpler and far easier operation practised in Bengal, viz., denuding the testes of all skin covering and allowing them to be eventually covered by granulations.

A very good account of this mode of operation appeared in the February (1862) No. of the Edinburgh Medical

Journal from the pen of Professor Fayrer and to it I must refer the Reader for a detailed account of the operation. That adopted in case VI upon which I operated in 1862 was precisely the same.

In the following cases my object is to point out—the complications likely to arise in connection with the operation, and the best method of meeting them.

The first case is given somewhat in detail and tends to show that Elephantoid Fever, the periodical occurrence of which is well known as a concomitant of nearly every form of Elephantiasis, will yield to Quinine as other intermitents do—but it will not be eradicated so long as the local excitant, (or local result) exists. The presence in this case, also, of the peculiar rhepetic eruption so frequently found to precede, or to accompany, Elephantiasis Scroti, and which yielded with great rapidity to a very simple remedy is of interest.

In this case (to which I before referred, at p. 334 of Vol. V. of this Journal) very nearly fatal results were induced by the exhibition of Chloroform.

I attempted, as will appear to make an artificial covering for both penis and testes—and to a degree succeeded in doing so but I do not consider that it was a judicious or safe proceeding—and it will be seen that it gave rise to some little trouble and the necessity for a second (minor) operation, before the case was complete.

Case I.

[Under the care of Dr. Montgomery.]

Rungasawmy, Æt. 30, No. 711.

28*th July*, 1860.—Admitted into the Native Infirmary this morning with enormous Elephantiasis of the scrotum, measuring 12 inches round the neck, 27 round the base. No pain is felt but the tumour is very weighty. The patient states that about a year ago he had an attack of venereal, which was followed by a smart attack of rheumatism confining him to his bed. On his recovering from this, he observed the scrotum was enlarging and it gradually increased, in size, until it attained its present magnitude. There is also apparently a quantity of fluid in the tunica vaginalis. The genitals are entirely embedded in the diseased scrotal mass, and there is much thickening of the scrotum itself. He

has also an itchy eruption over the body. General health good: pulse slow and weak.

℞ Decoct. Cinchonæ ℥ ii. ter in die.

1*st August.*—Continue much the same.

Omit medicine.

℞ Liqr. Hydr. Arsenici. et. Hydr. gtt. viii.
Aqua. ℥ i. *m.* twice daily—after meals.

5*th.*—Itchiness somewhat less; no change in the state of the scrotum; bowels costive.

Omit. Liqr. Hydr. et. Arsenici. Hydr.
To have Haust. Purgans ℥ iv. stat.

6*th.*—Bowels freely moved; eruption as before.

To have Papaya juice rubbed over the affected parts.

10*th.*—Had an attack of fever yesterday; eruption less itchy.

Continue Papaya juice.
℞ Decoct. Cinchonæ ℥ i. ter in die.

15*th.*—Eruption fading.

Continue.

17*th* 7 A. M.—Had an attack of fever yesterday, with an increase of pain and weight of scrotum; tongue clean.

℞ Quinæ Disulph. grs. xv. stat. to be repeated at 12.

18*th.*—Had no return of fever yesterday; feels less pain and weight in the scrotum this morning.

Cont. Quinæ Disulph.

19*th.*—Continues free from fever, but complains much of the pain and weight of the scrotum this morning; bowels open.

Continue medicine.

26*th.*—Continues free from fever; still complains of pain and weight of scrotum which impedes his walking.

Continue.

Apply a large suspensory bandage passed around the neck to support the tumour.

31*st.*—No change since last report.

Continue medicine.

Note.—The leaves of the Carica Papaya when pounded in a mortar-yield a green vegetable juice which has the property of checking Herpetic eruptions very speedily. The tree is common in Madras.

4th September.—As the patient had been free from fever for some days it was determined that the operation should be performed this day. With the assistance of Mr. Chipperfield, I proceeded to put him under the influence of chloroform. As to the propriety of this course there was some doubt, as his heart beat feebly, and the pulse in the right arm was always more feeble than that in the left.

Soon after the inhalation has commenced the circulation fell considerably, and almost instantaneously the patient appeared about to die.

The usual restorative measures were adopted and the patient revived: but all after operation was postponed.

8th September.—The diseased mass was this day removed in the presence of Dr. Paul and Mr. Chipperfield, who kindly assisted.

The operation was thus conducted. A flap of skin and subjacent structures was dissected up from the anterior and superior portion of the tumour, and the penis was disengaged from its surroundings. The organ was perfectly healthy.

The testicles were next disengaged and found to be both affected with hydrocele; two lines of incision were then made passing from the root of the penis to the central point of the Perinæum but so curved as merely to remove the thin skin on the outer sides of the tumour. Subsequently, the remaining diseased mass was removed.

The operation was much delayed by bleeding from small veins and arteries, and by the constant draining away of fluid from the semigelatinous mass of the tumour. The skin saved appeared all healthy.

The two hydroceles were tapped and the adjustment of the parts was next proceeded with.

The penis was enveloped in the flap of skin first detached; this having been rendered flexible by the removal of some of the diseased cellular tissue lying under it.

The skin lying behind and outside the curved lines of incision was turned upwards so as to be at the root of the penis, and this permitted of a considerable quantity of additional skin being removed. A scrotum was then formed of the remaining skin, and the patient was removed to a cot.

The patient was not (for the reasons given above) placed under chloroform, and he bore the operation well: brandy was given at intervals.

He was not even exhausted, and there was at the conclusion of the long operation little alteration in his pulse. But shortly after he became cold, and his stomach was sick, probably from the brandy given during the removal.

9*th.*—At 5 P. M. yesterday he was slightly feverish; took an anodyne draught of T. Opii. ℥ xxx., which did not produce a good effect; passed urine once during the night copiously; some swelling of penis and scrotum with slight oozing of bloody discharge from wounds.

Continue cold water dressings.
Bread, beef tea, conjee.

10*th.*—There is a black looking vesicle on the upper surface, of scrotum the right side of the penis; had some sleep last night; had fever for several hours yesterday; bowels once moved; says the pain in scrotum is less severe.

Haust: Anodyne *horâ Somni.*

11*th.*—The black vesicle is spreading; had fever about 1 P. M. yesterday, which lasted for four hours; had no rigor or shivering; slept well; bowels open; pulse full; soft; tongue moist; expression of countenance good; urinates freely. Had the Anodyne, draught with Sp. Æther Nit. ℥ xx. repeated last night.

To have ten grains of quinine at noon; scrotum to be kept well raised by tow, &c.

12*th.*—The part where the vesicle first formed is beginning to slough; fever came on earlier yesterday, but was less in severity and duration; perspired freely last night; his expression is good; slept well; bowels not open; swelling of scrotum continues.

To have an enema directly.
Quinine grs. x. at 10 A. M.
Repeat Haust Anodyne *horâ Somni*
Carrot poultice to be applied over scrotum.

13*th.*—The sloughing process is spreading and the prepuce is involved in it; sutures on penis removed; very offensive sanious discharge; his face does not indicate suffering; no fever yesterday; slept well; bowels very costive; pulse full, soft, rather quick; tongue clean; voids urine freely.

Let him have an aperient immediately.
Quinine grs. v. at noon;
Repeat Hs. Anodyne Hs.
A lotion of Chloride of Lime constantly to be applied.

The removal of the sutures, from the skin of which the covering of the penis was composed, was followed by a retraction of the penis and a consequent appearance of redundancy in the detached skin which assumed the appearance of a tumified prepuce while the glans penis, which had projected through the line of union, had acquired its natural position.

14*th.*—Sloughing has ceased to spread, and there is a fine line of demarcation to be seen; after the administration of a turpentive enema, the bowels acted freely.

Continue all remedies.

15*th.*—Sloughs separating and slight granulations visible; sutures from scrotum have all come away; perspired very much last night; bowels opened once yesterday; slept well; appetite improving.

Continue all remedies.

℞ Quinine gr. iii.
Acid Sulph. dil. ♏ v.
Aqua ℥ iss. *m.* ter in die.

16*th.*—Granulations progressing favourably; discharge thicker and more purulent; perspired less last night; bowels open; slept well.

Continue as before.

18*th.*—Granulations rather sluggish; Ung. Elemi to be used as a dressing.

Continue medicines.

20*th.*—Sloughs have all come away; having a healthy granulating surface; had slight fever in the forenoon yesterday; bowels open.

Continue.

22*nd.*—The improvement is going on very favourably; no fever yesterday; appetite good.

Continue.

24*th.*—Granulutious contracting very nicely; general health improving; bowels once open daily.

Continue.

25*th.*—A small abscess on left side of scrotum, opened; healing process going on satisfactorily in every direction.

Continue.

27*th.*—Contracting slowly.

Continue.

29*th.*—The man is improving daily; he is able to get out of bed and help himself now.

Continue.

1*st October.*—Penis almost well; scrotum healing rapidly; appetite good; sleeps well; bowels open.

4*th.*—Improving.

6*th.*—Progressing; penis healed.

10*th.*—Scrotum healing fast.

15*th.*—Will not yet allow the superfluous prepuce to be removed; scrotum healing rapidly; bowels open.

19*th.*—Almost all healed from the bottom; under the penis a small spot about the size of a double anna only, remains; granulations rather unhealthy here.

Touch with Cupri Sulph.

23*rd.*—A very small surface now open; the scrotum is so much contracted that the whole can be grasped in the hand.

25*th.*—All but well.

27*th.*—Well.—The scrotum is gradually getting smaller and softer; he is altogether an improved healthy looking subject now; plump in face; skin clean and soft, and in excellent spirits.

A few days subsequently the redundant scrotum was removed and the patient was then lost sight of.

I should be disposed to regard this case as, on the whole successful—and certainly productive of great amelioration in the condition of the patient had I not to take into account the facts, that a *second* operation was required, and, that the destructive process set up after the primary operation might have terminated more seriously. Besides, the scrotum, though symmetrical and pliant was not perfectly healthy and no guarrantee was given by its appearance that the disease would not return. I have heard nothing more of the man and possibly he may up to this time be perfectly healthy, but I confess that inasmuch as some diseased tissue did undoubtedly remain, I am apprehensive that at some future time another operation may be necessitated, and then the denuding process *must* be adopted.

The following case was operated upon by my friend Dr. vanSomeren and I confess that it does not appear to me to be very satisfactory. It came under my care a very few days after operation and I begged the man to submit to a

second operation but without avail. I beg to disclaim any reflection on Dr. vanSomeren's operation which was rapidly and skilfully performed. I do, however desire to direct attention to the fact that in this case as in No. I. the skin saved to form a scrotum, and which appeared healthy was not so. In fact as the case shows it cicatrised, after some loss by sloughing and left a hardened elephantoid covering for the testes.

Case II.

[Under the care of Drs. vanSomeren and Montgomery.]

Ramasawmy, Æt. 42, No. 675, admitted into the Native Infirmary, June 21st 1862. Dr. vanSomeren gives the following,

(Abstract of Case.)

"States that about eight or ten years ago, whilst crossing a "channel with a load on his head, he stumbled, and in falling "hurt the right side of the scrotum. Pain and swelling "followed, and though the former subsided, the latter not "only persisted but increased year after year, involving the "left side as well, till the scrotum attained its present dimen-"sions. The surface of the mass is covered to a large extent "with coarse tubercles, which became apparent at an early "period of the disease. The right side presents a large irre-"gular flesh-colored cicatrix, and, at some little distance "below it and nearer to the middle line, there is a deep de-"pression with puckered margins terminating in a sinus "through which sanious and offensive fluid escapes occasion-"ally. The energetic action of the dartos in the diseased "mass constituted a striking feature in the case, and the right "side of the scrotum was much the larger of the two. The "penis was imbedded in the morbid deposit, while the prepuce "formed the prominent margin of a depression in the middle "third of the tumour leading into a deep cavity, at the bot-"tom of which the *glans penis* can be felt.

"The following were the measurements of the tumour.

"From above downwards.....	14¾ inches
"From side to side.....	16½ do.
"From the centre of the pubis on one side to the centre of the pubis on the other side..... ...	48¾ do.
"Circumference (laterally)	40½ do.
"Weight of tumour about.....	25 pounds.

"The patient was a strong, muscular, healthy man, with a "sow and perhaps a soft pulse, but he seems to be in a very

"favourable condition, for the only remedial means his case "admitted, viz., removal of the tumour.

"This operation was accordingly performed on the 4th "July while the patient was under chloroform, and when I "had the valuable assistance of Drs. Paul, Montgomery, and "Chipperfield.

"The diseased mass having been raised and time allowed "for its being drained of blood as much as possible, two large "flaps were dissected off the lateral and posterior aspect of "the tumour, after which the mass was dropped and a flap "for the penis formed from the anterior and posterior por- "tion. The index finger of the left hand was then passed "into the cavity of the prepuce, and the point of a catlin "being guided along the finger, was forced through the tex- "ture at the reflection of the lining of the foreskin upon the "glans penis and the whole preputial cavity laid open. It "was then easy to free the penis from the morbid mass in "which it was buried, and subsequently the testicles and "spermatic cords were similarly dissected out. The right "tunica vaginalis being distended with a large quantity of "fluid, this was evacuated before the testicle could be easily "liberated, but when this was done and the penis and testes "held out of the way, two or three sweeps of the catlin "served to sever the diseased mass from its connections.

"There was comparatively little bleeding throughout the "operation, and at the end of it only two vessels required "ligaturing. The upper flap was then wrapped round the "penis and retained by sutures, and subsequently the lower "flaps were brought together and over the testicles, forming "a complete covering for them and the cords. A piece of "damp lint was placed over the genitals and the patient re- "moved to bed.

"However neat and satisfactory the appearance the parts "presented on the completion of the operation, our fears that "sloughing would occur to mar the work were only too "abundantly realized. A great part of the posterior flaps so "elaborately made sloughed, but though at first there were "some little febrile action, and that of an intermittent type, "the man's constitutional powers proved quite equal to the "drain upon them, and at no time were our apprehensions "excited regarding his safety. The sloughing process once "arrested healthy granulations sprung up, and what with

"these and the careful adjustment of the portions of the "flaps still remaining, there is every prospect of an efficient "covering for the testicles, while that of the penis is ample "enough.

"The only remark I could make at present regarding this "case is of considerable practical importance. I allude to "the extent of the integumental covering preserved for the "penis and testes. In another case I would not attempt to "make this flap so extensive as I did in this. Their distal "margins must necessarily be so far from the source of "nutritive supply that sloughing becomes a positive neces- "sity, and I would rather this actual redundancy of material "were removed by the knife, than by a process which subse- "quently taxes the vital powers of the patient. Nothing "could have looked better than the new scrotum that was "made for Ramasawmy when he was removed from the "table, and nothing could be more distressing than the sight "of our handy work melting away under the destructive pro- "cess of sloughing a few days subsequent to the operation!"

20*th July*, 1862.—A few days after the foregoing Abstract was written, I took charge of the patient as Dr. vanSomeren was obliged to leave Madras.

My notes of the case do not sufficiently explain that the scrotum, when the ulcerative process was arrested, assumed a puckered and hardened condition evidencing that the diseased structure was not all removed.

To my entreaties that he would allow me to remove a portion of the new scrotum which was clearly elephantoid, the patient replied with a continued negative and all I could do was to attempt to reduce the parts to the most seemly condition possible by appropriate dressings, &c. My notes run as follows—

22*nd July*.—Parts looking clean and healthy; patient though reduced in flesh is looking cheerful. Has no fever; his bowels are open every day; appetite good and he sleeps well. Conjunctivæ rather pale, has been taking for the last five days 4 grains of quinine three times a day, and Tr. Ferri Sesquichlorid. ♏ x. in water after each meal. The brandy which he had been taking since the 8th to be omitted and ʒ iii. of arrack to be given instead.

24*th*.—Progressing favourably, there is a small abscess at

the root of the right side of the penis. Apply caustic and compress and go on with the other remedies.

27*th.*—Going on well.

Continue omit Quinæ.
Continue Tr. Ferri Sesq.

31*st.*—The parts are contracting, but look puckered and ugly; bowels regular; appetite good.

Continue medicine, apply Ung. Elemi as a dressing.

4*th August.*—A small abscess formed at the base the scrotum, and a small sinus leads into it from the top of the left side. Considerable hardness and swelling of the prepuce and scrotum remains. Abscess opened: and is to be kept open by lint until the sinus heals from the top of scrotum.

Continue remedia.

10*th.*—Sinus healing from top.

Continue.

16*th.*—Sinus nearly healed.

Continue.

25*th.*—Sinus well: thickening of scrotum, softer; puckered much the same; patient gaining flesh; bowels regular.

Continue.

31*st.*—All the parts are nearly healed; health of patient very good; gaining flesh daily.

10*th September.*—Well. The hardness of scrotum reducing and the prepuce is much softer; expresses a wish to go home.

In summing up the results of this case I can only repeat what I have before said—that I do not consider it as entirely satisfactory because diseased tissue was undoubtedly left. And here I may observe that skin which during operation may, *by comparison*, appear quite healthy, does occasionally in the after treatment of the case prove to be very much the reverse. A good example of this is to be seen in case No. 5, where I carefully removed (as I thought) all diseased skin and found 72 hours afterwards that I had not done so.

The case of Mr. E—— the next under review is very discouraging and the difficulties that arose in it were both numerous and embarrasing. Mr. E. was a man of singularly quiet and retiring habits—silent and diffident to a degree and I do not doubt that this temperament influenced the case in its latter stage. His death, from Cholera, was scarcely

to be wondered at in a person of his timid and nervous disposition.

His case illustrates one of the peculiar degenerations which sometimes occur in the testicle and of which no previous indication was afforded until operation disclosed its morbid condition.

Case III.

[Under the care of Drs. vanSomeren and Montgomery.]

Hydrocele.

Mr. E. Æt. 26½, Assistant Apothecary, Temperament, lucophlegmatic ; habits, temperate.

On admission upon the sick Report Mr. E. furnished the following statement to Dr. vanSomeren and it is worthy of perusal as showing the slow progress of the disease for the care of which, by operation, he was now anxious.

"In 1856, while a student in the Medical College, I observed a gradual thickening of the skin at the lowermost part of the scrotum. I felt no pain, or uneasiness from the affection then. In course of time the anterior and lateral portions became involved ; the posterior part, however, remained free from the disease. The left side of the scrotum in particular (taking the raphe as the median line) participates, more largely in the disease than the right side, subsequently the prepuce and the integument covering the body of the penis, became œdematus and infiltrated with serous fluid. This smelling exists up to the present time, increases during the night and decreases in the morning ; it also prevents the glans penis from being exposed properly excepting when the œdema subsides by pressure of the clothes and disappears for a time. There is also a hydrocele of the left testicle. This ailment produces great depression of spirits and incapacitates me for bodily and mental employment. At the onset of the disease I did not seek for medical advice, neither did I endeavour to arrest its progress by the use of remedies. Latterly finding it increasing, I sought the advice of Dr. vanSomeren, who recommended strapping with Iodine plaster and the use of Sol. Ferri Iodid. with Strychnine. Deriving no benfit however from treatment, I am induced to submit to an operation."

Dr. vanSomeren thus continues the case.

"I need scarcely say that I did not suppose strapping "with Iodine plaster, or a chalybeate course, which was "otherwise indicated, would bring about the cure of a con- "dition which only an operation could remedy ; I accord- "ingly, assisted by Drs. Montgomery and Chipperfield,

"proceeded this morning, the 18th July, to remove the "diseased mass.

"Two posterior lateral flaps having been dissected off, "while the scrotum was raised, it was then lowered to allow "of the removal of the thickened and infiltrated prepuce by "circumcision and the subsequent formation of a flap for the "penis. This done, the penis and testes were successively "liberated from the morbid mass which was then cut "away. Only two vessels required ligatures, and but little "blood was lost during the operation. The edges of the "different flaps were approximated and retained by su-"tures, both testes and penis being covered.

"The operation was performed under chloroform, and dry "lint was applied as a dressing; very soon, however, there "was copious oozing of blood from between the edges of the "flaps, which dry compresses and a bandage seem to check "only temporarily, so that ice was applied to the parts "with the desired effect of arresting the flow.

"I saw the patient about 11 A. M., and again about 4¾ "P. M., when he was doing well. There had been no return "of hæmorrhage, and at the latter time his skin was cool, "and pulse 72 and soft. On my return about 8-20 P. M. he "was rather warm and restless, his pulse accelerated, and he "had passed only a small quantity of urine since the oper-"ation, but there was no bleeding. A mixture of Liqr. "Ammon. Acetatis, Tr. Hyoscyami, and Vin. Antimonialis "was ordered and given in the following proportions and "frequency.

℞ Vin. Antimon. ♏ x.
Tæ. Hyoscyami ♏ xx.
Aq. Ammon. Acet. 3 vi. *m.*
"To be taken every four hours.

"19*th July.*—Mr. E. is less feverish this morning, and "the appearance of the parts operated on is exceedingly "favorable.

Continue mist.

"20*th.*—Bleeding returned yesterday when the patient "rose to make water, but was arrested by the application "of ice. The penis being retracted appeared the cause "of considerable uneasiness and difficulty in micturition, "and as the prepuce was œdematous, the glans could not be

"reached in order to draw it out again. I therefore remov-
"ed the sutures that retained the edges of the prepuce in
"apposition, and then laid hold of the glans, and drew it
"out with the lining of the original foreskin, which
"was then by four sutures attached to the outer skin, and
"the glans secured externally by a strip of plaster carried
"round the penis three or four times. During the night Mr.
"E. became feverish, and had several doses of the dia-
"phoretic mixture ordered two days ago. This morning his
"fever has abated, but his bowels have not been opened
"since the operation; and his urine is scanty, glans retract-
"ed during the night after he removed the strapping: and it
"had to be drawn out again this morning.

℞ Sulph. Mag. ʒ ii.
Acid. Sulph. Dil. ♏ v.
Inf. Gentian ʒ ii. *m.* ft. haustus.

"To be taken every three hours till the bowels are freely
"opened, provided this result is not obtained by a saline
"injection.

"*Vespere.*—One free evacuation; three doses of mixture
"taken; skin cool; tongue coated and white; urine free;
"appetite fair, but has been feverish during the day; no re-
"turn of bleeding, and no relaxation of penis.

℞ Sulph. Quinæ. grs. iv.
Acid. Sulph. Dil. ♏ vi.
Aq. Pura. ʒ iss.

"To be taken every five hours.

"21*st.*—Ordered by Dr. vanSomeren.

℞ Vin. Antimon. Tart. ♏ xxv.
Tinct. Opii. ♏ v.
Legt. Ammon. Acet. ʒ ss.
Mist. Camph. ʒ i. *m.* ft.

"To be taken every 4th hour."

The use of the foregoing relieved Mr. E. from the feverish condition of skin under which he was labouring and by the evening of the same day I had assumed charge of the case as Dr. vanSomeren had left Madras.

I saw Mr. E. both in the afternoon and at a late hour at night, as I happened, accidentally, to be passing the Hos-

pital. The prescriptions sufficiently indicate the condition of the patient.

℞ Tinct. Opii. ♏ xxxv.
Tinct. Hyoscyami ♏ xxx.
Mist. Camphor. ℥ iss. *m.* ft.
Sum. hor. decubit.

Same night still slightly feverish and restless: and has not slept ordered the foregoing.

℞ Tinct. Opii. ♏ xxxv., &c.

Some of the sutures have sloughed out and a large clot is situated in the upper right angle of the wound.

22*nd.*—As the ligatures were cutting out, I divided two of them and so exposed fully a large clot, the skin on the right (the healthy) side of the scrotum is found to be slightly vesicated, but apparently this is not due to gangrene.

Ordered the scrotum to be well supported and a large poultice with ℥ i. of Tinct. Opii. to be applied.

℞ 4 grs. of quinine every six hours while fever is absent.

℞ Diaphoretic mixture during fever, but without Opium.

23*rd.*—Was feverish all day yesterday up to the evening; his stomach was uncomfortable and he felt nauseated. Ordered.

Omit Pot. Tart. Autim. Vini. and give only
℞ Liq. Ammon. Acet. ℥ ss.
Spts. Æther Nitr. 3 ss.
Mist. Camph. ℥ iss. *m.* ft.

Evening.—As his bowels had not been moved up to 7 P. M., ordered enema purgans, *statim;* and at 9 o'clock

℞ Mist. Camph. ℥ ii.
Tinct. Opii. ♏ l.
Tinct. Hyoscyami ℥ i. *m.* ft. haust.

On the whole he feels better, he has slept well, and his feverishness is declining.

The remaining sutures have sloughed out and a small portion of the right side of the scrotum has also disappeared; but the rest of the scrotum appears now to be healthy and granulations are springing up on the testicle.

℞ Enema purgans, statim.
Continue Mist. Diaphoret if fever returns.
In the absence of this continue Mist. Quinæ.

24*th.*—Much improved, little or no fever yesterday; pulse quiet and regular; skin cool, and he is in good spirits to-day; I opened out the scrotum and carefully cleaned away all clots; no hæmorrhage; granulation is beginning, and a good deal of the deposit of the disease is being thrown off.

Continue as yesterday.

25*th.*—Going on nicely; had no fever yesterday until evening, when he became a little hot; he did not take the opiate as he complains that it makes his stomach sick.

The hydrocele of the left testicle has reappeared and it was tapped this day; about an ounce of serous fluid escaped.

Cont. Mist. Quinæ with the addition of ℥ vi. doses of Tincture of Opium if diarrhœa recurs.

26*th.*—Going on well; the left testicle is still large; and a small quantity of serum was let out; the testicle appears to be a little swollen.

Healthy granulations are now springing up in the bottom and sides of the wound, except at the right side in which the process of disintegration of the skin is still going on, although there has not been any actual loss of soft parts; the right testicle is apparently atrophied, calcareous, and of small size, lying up close to the inguinal canal; the left is slightly enlarged and occupies the centre of the scrotum.

Mr. E. is much better to-day; had no fever, and he feels stronger; he had same tonic yesterday, and with great benefit: the quantity of quinine to be gradually diminished and a bitter tonic substituted.

27*th.*—(Sunday) going on well.

Continue wine, and Mistura.

Quininæ, and if restless at night, as he was last night, to have

Tinct. Hyoscyami ʒ ii.

28*th.*—Tinct. Hyoscyami ʒ iii. h. s. s.

30*th.*—P. Jacobi grs. iii. 4 tis horis.

31*st.*—Has been going on pretty well, but has suffered a little from fever coming on irregularly; his sleep at night is not good, but he has a great objection to take opiates or sedatives.

Yesterday as the scrotum was not filling up satisfactorily, he had Elemi Ointment applied. The condition of the parts

to-day is as follows: there is no trace whatever of sloughing, the scrotum is filling up nicely, and the left testicle is becoming more of its natural size, and the fluid has nearly disappeared from the Tunica Vaginalis.

℞ Infus. Gentianæ oz. ii. ter in die.

½ measure of wine at dinner, but not at any other time.

3*rd August.*—The case continues to make slow progress, and the patient's health seems somewhat improved. He was yesterday removed from the hospital in which he had remained since the day of operation. He was now ordered nourishing food as much as he could eat and to use a little brandy and water with his dinner.

14*th.*—Since last report the patient has not been progressing satisfactorily. The flap of hypertrophied integument formerly placed on the dorsum of the penis has separated and becoming flattened out, its sides have adhered to the symphysis pubis, and so bind down and retract the penis in an uncomfortable manner. The penis is also so closely applied to the left testicle that it is to be feared that adhesion may take place between the two organs. I some days ago recommended that this flap of skin should be removed, but the patient was too nervous and desponding to permit this to be done. But to-day he consented to submit to the operation in which I was assisted by Mr. Chipperfield. A line was drawn across the base of the proposed covering of the penis and the incision carried through the hypertrophied skin, and the flap was dissected up from the penis, to which it has formed loose adhesions. Two small twigs of arteries bled freely and were ligatured. The penis was now drawn out and surrounded with lint, and the left testicle was fitted into the scrotum as well as could be done. It was retained in position by straps of adhesive plaster and the patient had an opiate: some brandy and water was given during the operation as he felt faint. Chloroform was not used.

The condition of the right testicle which is degenerated and calcareous, precludes the hope that this organ will be of any future use, the other testicle is healthy.

22*nd.*—Since last report has decidedly improved in both his local and general state. The parts are looking healthy, but granulation is exceedingly slow and as yet no adhesion has taken place, while the surface of the testicle and the

lining of the scrotum have that glazed look that so frequently precedes cicatrization.

Under these circumstances the right side of the scrotum was pressed back so as to cause it to adhere to the subjacent parts, and it was hoped that the testicle might granulate on the surface to cicatrization and adhere posteriorly to the insufficient scrotum. Thus the organ would be in a suitable position and adequately covered.

The penis was kept well separated from the testicles, and it is now more easily drawn out. He has had erections of it on two occasions.

23*rd.*—As he was complaining yesterday of slight sickness of stomach and general debility from long confinement, he was ordered

℞ Sesquicarb. Ammoniæ. grs. xx.
Acidi. Cit. Cryst. gr. xxiv. *m.* ft. haust. sumat in efferves. ter in die.

24*th.*—Going on well; parts are beginning to cicatrize as desired, but the union of scrotum and testis has not yet occurred.

25*th.*—Same report. Has had some acidity of stomach.

℞ Infusi. Gentianæ oz. ii.
Carb. Sodæ grs. v. *m.* ft. ter in die.

He has for the past ten days sat up a good deal and walked about. He is more hopeful than formerly, and his appetite is improved.

Continue.

26*th.*—Doing well. The right side of the scrotum which was only ¼ inch deep has now adhered to the parts below.

[Was attacked with cholera on the night of the 27th and died on the evening of the 29th.]

For the particulars of the following case, I am indebted to Dr. Paul whose summary of it sufficiently conveys information upon the points of especial importance. By his courtesy I was enabled to see the patient during and constantly after the operation. I must however again repeat what I have before said with reference to cases I and II and III, that hardened tissue left after the operation appears to me to lay the patient open to great risk of a return of the disease. I saw this patient, for the last time, several months after the operation had been performed, and even then considerable hardness of the new scrotum existed although

the patient stated, that it was declining, or, if not certainly not increasing.

Case IV.

[Under care of Dr. Paul.]

"Alwar Naidoo, Æt. 27, presented himself with a very "large tumor at the Civil Dispensary for relief in the early "part of July 1862. Though of only seven years' growth, "the tumor was so large that he required a particular shaped "chair to enable him to sit down and progression beyond a "few yards was quite impossible. On alighting from a native "carriage, he appeared to have a huge bundle of very weighty "material suspended from his perineum by some means, and "he could just hobble for a few yards, his legs and thighs "wide apart with this enormous mass dangling between them "and almost touching the ground. When standing in the "erect position the tumor has a triangular appearance, the "apex at the pubis, and the base below, with a sulcus separa-"ting the right and left lobes of scrotum. The left side is "very much larger than the right, however, and enters mainly "into the formation of the base of the triangle. The penis "is buried in the tumor and its position indicated by a cork-"screw shaped portion of integument raised considerably "above the level of the surrounding mass. There is an "elongated sulcus or excavation two inches broad and eight "long, yielding thin purulent matter near the base of the "tumor, which resulted from an incision and escharotics "employed by a native doctor, and several smaller cicatrices "are scattered over its surface, the result of punctures and "ulcerations. The mass is very dense and brawny to the "touch. The patient states that the mass is of seven years' "growth, that during the early period of its growth he was "subject to irregular attacks of fever recurring twice or "thrice a month. When these came on, a marked increase in "its growth, attended with exacerbation of pain and uneasi-"ness, took place. The mass measured

	Feet.	Inches.
Antero-posteriorly	3	4½
Lateral circumference	4	10
Circumference at base	4	9
Diagonal measurement	4	7

"The tumor weighed in a platform scale before removal "83 lbs., after removal and drained of a considerable por-"tion of fluid 63¼ lbs.

"In consultation it was decided to remove it. The patient "being under the influence of Chloroform. Two stout hooks "attached to a rope moving on a pulley-fixed in the roof were "thrust through its base, one on either side, and the mass "raised.

"A stout knife was then introduced into the neck of the "tumor, opposite the centre of the fold of right groin and "carried backwards in an elliptical direction towards the "mesial line of the perineum. A similar incision was made "on the left side. These flaps were then raised and the tumor "being lowered by the pulley, the puckered prepuce was seiz-"ed and the knife thrust into the skin below it and carried "downwards for a little distance, and two flaps raised to "cover the body of the penis. From the extremity of these, "the knife was carried along the fold of the groin till it reached "the central point of groin from which the posterior flaps "commenced. The penis was then disected out and thrown "over the pubis, the skin on its dorsum being little affected was "not interfered with. The point of the knife was then thrust "into the mass in the direction of each spermatic cord and "carried downwards and outwards for a few inches.

"The cords being found were dissected out till the testes "were reached; they lay buried in the anterior segment of the "mass without any intervention of fluid. They were easily "dislodged. They were small firm and healthy with their "cords very much elongated. On being dissected out they "were thrown on the pubis along with penis. The large mass "was then severed by a few strokes of the knife from its at-"tachment to the perineum.

"There was some amount of bleeding both arterial and "venous from the flaps during their dissection, but this was "speedily restrained by numerous ready hands and the bleed-"ing vessels tied. The venous hœmorrhage, after the "removal of the tumor itself, was arrested by ice. The "patient however lost but little blood considering the magni-"tude of the tumor. The posterior flaps were now brought "together and retained by iron wire sutures so as to form a "pouch for the testes in which they were lodged and the "anterior flaps were stitched together underneath the penis, "and the whole covered with pledgets of wet lint, supported "by a suspensory bandage and the patient put to bed. Vomit-"ing occurred soon after the patient's removal to bed.

"The shock of the operation was great, and from it the

"patient had scarcely rallied before evening, notwithstanding "the plentiful exhibition of brandy, ammonia, soup, &c., but "he had quite rallied by evening and passed a tranquil night. "Some febrile reaction set in and the pulse ranged above 100 "for many days, and the discharge from the wound continued "very profuse for some weeks. The margin of the posterior "flaps sloughed and some portions where there was induration "and which subsequently appeared redundant, were destroyed "by caustic potash. Eventually the large gap cicatrized and "the patient left the house, and now walks about quite well. "He tells me that his sexual functions are now quite perfect "and an excellent covering has been made for the testes "which though thickened has shewn no tendency to take on "Elephantoid action. The penis is also satisfactorily covered "and its integument shows no desposition to become Ele-"phantoid."

The subject of the foregoing case is a Resident in Madras and in this respect we are fortunately able to look forward to the possibility of again hearing of the case if the disease should return. One of the most important practical questions as to operation being, the amount of good attained on those cases where diseased—or hypertrophied—skin is left.

The following cases under my own care were operated upon on the same day, and presented some peculiarities both as to the extent of tissue involved in the disease and the necessary modifications, arising therefrom, of the operations had recourse to in the four preceding cases.

Case V.

[Under care of Dr. Montgomery.]

Iyaloo, aged 36, No. 826, admitted into the Native Infirmary, 24th July 1862, was found to have a large elephantoid swelling of the scrotum, but affecting especially the lower part of it which was of stony hardness but with deep fluctuation due to double hydrocele. The skin of the posterior part of the tumour seemed perfectly healthy as did some of that occupying the superior and lateral part of the mass: the rest of the skin was clearly elephantoid. Traces of old standing herpetic eruption were over the scrotum, and except in this respect the man was *apparently* in good health as far as his external physique was concerned.

On examining his pulse, however, I found it slow and weak not more than 50, when lying down, and 56 in the erect position, rapid movement accelerating it to 65, seldom more.

I should mention that the penis in this case was not at all involved but the prepuce was œdematous and slightly swollen but certainly not elephantoid. The patient's account of his case will throw some little light on this complication.

He said—

"At the age of 16 I went from Madras to Pondicherry and thence to Mauritius. I was then perfectly healthy. I had small pox as a child, when I had been in Mauritius I contracted Gonorrhœa. I never had syphilis; the scars on the prepuce followed the inflammation produced by removing phymosis. When I got well of Gonorrhœa I got an itchy eruption over the scrotum chiefly at the lower part of it, I put cocoanut oil and it soon dried up. It remained well for 6 months and then broke out again. It again dried up and again broke out every six months until 3 years ago.

"After the eruption had disappeared the scrotum began to swell chiefly on the right side and lower part where the eruption had formerly been. Since the swelling there has been no eruption. The hardness of the skin increased gradually and spread slowly. I have had fever in 1861 not previously. I had only one attack of fever it lasted 15 days and was not accompanied or followed by any increase in the scrotum. I was ten years in Mauritius, I was in good health when I returned. Three years ago I was in this Hospital and then had an abscess in the right side of the scrotum which was opened. The scrotum was then swollen from the abscess but not like this, this came on afterwards. I also at this time had hydrocele of the right side, this was tapped and the water drawn off. The hydrocele had been a long time I think 15 years, it came on when I was quite young, it gave me no pain but from its weight: it arose from a blow. It used not to be affected by the eruption it continued always the same.

"While I had Gonorrhœa I got phymosis aud I was scarified on the prepuce by a French Doctor, the cuts ulcerated and left the scars you see. After this the prepuce was not swelled. I do not know when it began to swell. I have had Bubo and swelling in the neck which burst 7 years ago."

Believing that with a man in good health unnecessary delay in Hospital is not desirable, I determined upon early operation and on the 2nd of August, the elephantoid scrotum was removed. I was assisted, especially by Messrs. Porteous, Paul and Chipperfield but such additional assistance as was required, in this and the next operation, was readily

afforded by the numerous professional friends who were present.

The patient was carefully put under Chloroform and the operation was of the simplest kind. A circular, incision was carried round the scrotum, commencing at the root of the penis, the incision being through healthy skin only, the incision passed from the patient's mesial line to the left then posteriorly and then to the right and so on to point of commencement of incision. Large double hydrocele formed a capital indication as to the depth of incision necessary to reach the Tunica Vaginalis. When the circular incision was turning from the posterior aspect of the mass to the right side it was found, by the sensation imparted, that the skin was here elephantoid higher up than at any other part. Having carefully examined I altered the line of incision and then cut though skin apparently as natural as any skin could be.

The hydroceles were tapped and in doing so an accident happened that might have caused damage, and which in Mr. E ——'s case would have been decidedly injurious, viz., that having punctured the *left* hydrocele, I found to my regret that the testicle was adherent and had been slightly wounded. This might have been very easily avoided had I examined the hydrocele. I had previously done so to the *right one* as I had (as mentioned by the patient) operated on him for that affection in 1857, but finding no adhesion where Iodine injection had been used, I did not anticipate any such complication on the other side.

No ill consequences followed this slight injury, but I think it right to mention it as a caution to others.

The adjustment of the scrotum was easily effected and result was very satisfactory. The patient was removed from the table with a symmetrical scrotum of the natural size and of perfectly healthy pliable skin which fell into natural rugæ when relieved from the weight of the amputated portion. The solid part removed was in weight 4½ lbs. and only 3 or 4 small vessels required ligature: there was little hæmorrhage but some serous draining occurred during the operation when the diseased skin was cut, as before mentioned.

Interupted wire sutures were applied in the line of the raphe and the edges fitted very nicely—cold water dressing applied and the direct union was complete in three days.

But on the 5th of August (4th day) the patient had fever and on same evening a vesicle appeared on the right side close to the place where the unhealthy tissue had been cut through, and the skin appeared thickened though not decidedly Elephantoid.

This yielded in 8 days to appropriate treatment and it is worthy of remark that the diseased action extended up to the central line of union, yet it did not spread along it as I feared it might do; and the artificial raphe remained intact. All the thickened skin sloughed away.

The vent given for the accumulating hydrocele fluid on this side and the amount of irritation set up seems to have cured the disease, but on 24th August (23rd day of case) the hydrocele of left side had acquired considerable size and was tapped.

An attack of Diarrhœa occurred subsequently but no other bad symptom occurred. The left hydrocele a second time filled and on 3rd September (33rd day of case) 12 ounces of dark reddish fluid was evacuated and no subsequent accumulation occurrred.

The patient was on his discharge perfectly cured: the scrotum pliant soft, and healthy in appearance, perfectly sensitive and rugose. The only portion looking uunatural was the scar left by the destructive process the ravages of which had been filled up by granulations.

The patient left Hospital on 29th September or 58 days after operation.

Case VI.

[Under Dr. Montgomery's care.]

Narrainsawmy, Æt. 24, No. 866, admitted into the Native Infirmary, 1st August, 1862.

The last case to which I have to refer was that of a Guard, on the Madras Railway, an intelligent and highly respectable man who could (unlike the other cases) give an intelligiable and apparently reliable account of himself and his family. I have entered his statement in extenso as affording some support to those who view elephantiasis scroti as, like other forms of the disease, strictly hereditary —or frequently so. Although the patient denies having had any *eruption* upon the scrotum yet he allows that *itchiness* of it was present. I think that the connection between this Herpetic eruption and the disease has not

been sufficiently attended to ; and that vigorous scratching of the scrotum and constant irritation would certainly tend to the local development of the disease of a constitutional tendency to it was previously in existence.

The patient was in sufficiently good health to continue his usual avocations until the day previous to that appointed for the operation.

Narrainsawmy, Æt. 24, No. 866, admitted into the Native Infirmary, 1st August 1862, was affected with a small but hard Elephantiasis Scroti.

The penis was entirely out of view, but could be slightly protruded and was so on erection even more, the extreme end of the prepuse was healthy, as then exposed to view.

The following is his own statement.

"I am a single man. I want to get married. I was a healthy child. My mother is alive and in good health ; she is about 40, she has always had good health. I have one sister, she is older than me and healthy, my father died ten years ago from abscess of the leg. My grandmother had Elephantiasis of the leg, she is my mother's mother, she is dead.

"My first illness was ten years ago. I had then bubo in the right axilla which came on of itself and which subsided, when this went away I had the same in both groins, *I had previously had Gonorrhœa* but no sores on the penis.

"After these buboes went away there was no swelling where they had been : none of them burst.

"About 3 years ago the skin of the penis and scrotum began to swell, the latter began first and was followed by that of the penis almost immediately. The swelling came on with fever, *then* the swelling was painful but not so when fever was absent.

"Before this time I had fever when I had the buboes—but not at any other time. I never had any eruption, but I had a good deal of itchness in the scrotum for some time before the swelling, I scratched it a good deal and brought small sores on it. These healed when left alone, for three years I have had fever occasionally, but latterly once in a month, followed by increased swelling and pain.

"I have been a Railway Guard for nearly three years, and the fever has been worse since my journey, went as far as Salem.

"I have never suffered from giddiness, or cold feet, or debility.

"I am not fond of drink, but if any gentleman passenger in the Train gives me liquor, I do not refuse it.

"What more can I say ?"

The foregoing history is much more intelligent than that

we usually obtain from native patients, and it contains some facts upon which it would be easy, and perhaps not uninteresting, to remark: but, my present intention is merely to dwell upon the case as it presented itself for operation.

There was nothing in the *appearance* of the patient to render this difficult or hazardous, but my attention was arrested by the peculiarly slow pulse and the remarkably feeble condition of the circulation. The pulse of the patient when recumbent was weak and *never above* 48, standing up it rose to 50, but even after moderate exertion never exceeded 60. When it is remembered that this condition was present in a young man, accustomed to active exercise and in sufficiently good health to allow of the absorption of 3 sympathetic buboes without ulceration, it was sufficiently striking to make me hesitate as to the propriety of administering chloroform. Recalling, too, the alarming effect of this agent in case No. 1 (p. 348), and the condition of Dr. Paul's patient, (p. 364) I did not consider myself justified in using chloroform without the sanction of those who assisted me in the operation. With their approval it was administered by Mr. Chipperfield, upon whose judgment I placed the most entire reliance (and whose valued assistance in this and many operations I here most gratefully acknowledge) and, the precaution being taken of previously administering a stimulant (wine) no ill results followed—and the operation was rapidly concluded. The patient soon rallied and no ill effects followed the inhalation.

The process of denuding the penis and testes was by no means so easy as might be imagined owing to the extreme rigidity of the hypertrophied scrotum. It was one solid mass with little fluid and closely adherent to the Tunica vaginalis. Double hydrocele existed, not of large size and they were not tapped.

This procedure was adopted on the theoretical argument that they would form a larger basis for granulation, and that the cicatrix would by its contraction obliterate the hydrocele by pressure, without the risk of leaving the testes adherent to a thick and rigid cicatrix. I feared also that, if a small surface for cicatrix were presented, eventually the testes might be too much pressed upon by it—and possibly become atrophied.

The operation was merely the denudation of the genitals, and they were subsequently dressed with wet lint and the

patient ordered to preserve the horizontal posture and to avoid excitement of any kind.

Of the after treatment there is nothing to record except that the patient for days together denied that he ever slept —and asserted that the opiates given were worse than useless. Although I had ocular proof of his powers of sleep, yet, when suppuration had fairly commenced, I allowed him a glass of brandy and water at bed time, which in his opinion was the best medicine he had.

He was, as might be expected, feverish for some days, but moderate doses of Quinine soon removed this, and *Iron*, medicinally given as a tonic, seemed to promote the granulations.

The only part of the case requiring care was the separation of the penis from the testes and their coverings so as to prevent union. A collar of adhesive plaister effectually settled this difficulty and kept the penis well extended.

The ordinary astringent and stimulant applications were used to promote, or improve the character of the granulations, and eventually the patient was discharged cured, on 31st October.

It will be observed that the cure was quite half as long again, in being accomplished, as in the preceding case. This arose from the slowness of cicatrization—a circumstance little to be wondered at in parts where the circulation must, of necessity, have been feeble from the first.

This patient paid me a complimentary visit on 1st January of this year, 5 months after operation, and his appearance was highly satisfactory. Not a trace of disease remained, and the thickened scrotum was replaced by a thin and sensitive one, within which no hydrocele could be detected, but the testes were not adherent; nor was the scrotum too tight. *His heart had gained strength and his pulse was more frequent than before operation.*

The weight of solid matter removed from this man was 6½ lbs. although the scrotum was not very much enlarged, but it was exceedingly hard.

The record of these cases has extended to such length that I am unwilling to prolong it by needless observations, but a few points demand pressing notice, and I will give it in the form of axioms which would guide me in future operations, or the treatment of cases of scrotal herpes.

1*st.*—That herpetic eruption of the scrotum is often the precursor of elephantiasis—and that it should therefore be checked as soon as possible. This may be done by such means as are usual in this affection, or by the leaf juice of *Carica Papaya.*

2*nd.*—That the condition of the heart should not be overlooked, and that the administration of chloroform should either be avoided, or used with extreme care.

3*rd.*—That the size of the tumour should not deter from operation.

4*th.*—That it is at all times better to remove too much than too little skin: that no diseased skin should be left behind: and, that complete denudation of the genitals is, in its after treatment, less likely to be complicated by sloughing.

5*th.*—That (as shown in these cases, though not recorded in all of them) the generative powers are restored after operation.

The time occupied, in the cases where I have specified it, was as follows, No. I, (from date of operation to discharge from Hospital) 49 days. No. II, 66 days. No. III, died of cholera on 42nd day after operation. No. V, 58 days, and No. VI, 90 days.

I find that Dr. Fayrer has found a longer time of treatment occasionally necessary. Thus he mentions (*op. cit.*) 139, 71, 102, 53, 38, 47 and 106 days were required to complete cure in 7 cases and 114 days left two patients still under treatment.

The causes of death, from the operation, in Dr. Fayrer's cases were 4—3 from pyemia and one from shock. It is a question whether or not chloroform may have been the active destroyer here.

The summary of the cases in Madras shows the favourable results of five cured, and one died from cholera when all immediate danger from the operation was over.

Intentionally I have not dwelt upon the minor details of the operation, which is neither difficult nor necessarily very long, because I could add nothing to the many records already existing on the subject.

PART II.

REVIEWS AND NOTICES OF BOOKS.

Clinical Medicine. Observations recorded at the bed-side, with Commentaries. By W. T. GAIRDNER, Physician to the Royal Infirmary of Edinburgh, and Lecturer on the Practice of Medicine. Edinburgh: EDMONSTON AND DOUGLAS.—1862.

WE have seldom perused a work with more satisfaction than this of Dr. W. T. Gairdner's. Treating as it does of some of the most moot and recondite medical questions of the day, its author has succeeded in rendering it a very valuable acquisition to his professional brethren,—not only by the clear enunciation of the principles which should regulate treatment in the different diseases that pass under review, but also by a faithful enumeration of "the very facts, and, as nearly as possible, the very doubts, difficulties, successes, and failures actually encountered" by a hospital physician and teacher of several years' experience. Evidently pursuing his enquiries in a calm and philosophic spirit, in an honest search after truth, and without any preconceived bias to warp his judgment, or any favourite theory to support, he inspires the reader with perfect confidence in his conclusions. The author too has introduced a novel, but none the less useful, feature into his book. "Diagrammatic representations of physical diagnosis" in the records of cases observed, present the nature of these cases to the mind with a distinctness and objectiveness that nothing else can do, and the practical bearing of this upon therapeutics is too obvious to need specification.

As an illustration of the candour and honesty of the writer in the narration of his cases, we would point to one mentioned in page 11. "S. came in with a diarrhœa that had lasted several weeks; his urine was found to be albuminous, and of low specific gravity, thus clearly defining the case. The diarrhœa had reduced the patient's strength considerably. After a trial of the pernitrate of iron, I

ordered him an astringent mixture containing opium. I neglected at the moment to observe that the kidney was diseased; if I had kept this fact in view, I would have avoided, if possible, using the opium at all. After having taken the mixture for a short time, the man passed into a comatose condition; but I don't blame the opium for this, as it was discontinued the moment his altered state was observed, and the coma went on for a much longer time than the opium would have taken to be eliminated. The coma deepened and the man died. The pathology of the case was then evident, it was one of Bright's disease of the kidney. This organ had become disabled and led to the uræmia, and to some retrograde ulcers, of tubercular origin, in the intestines.* * * How easily might we have had ourselves to blame, apparently for the death of this man! How anxiously we ought to watch from hour to hour, so as to avoid such a result!"

Another case, in some respects similar, also terminated fatally, but in a manner certainly very unexpected and apparently mysterious, and it is referred to as illustrating "very well a class of accidents, which sometimes take the practitioner by surprise, and which may bring him, unless fortified by character and protected by circumstances, into trouble." Exactly so, and yet we fear that it is out of such cases that capital is sometimes made, even by some medical men of repute, at the expense of others. Instead of coming frankly and boldly forward to the support of a professional brother in such a difficulty, and endeavouring to set him right with the public, who are only too ready to form a harsh judgment against him, we have known not merely a holding aloof, but a positive encouragement given to cruel and unjust censures. Such encouragement does not always find expression in words. A look of pity, an ominous shake of the head, and a self-sufficient and patronising demeanour, are often more expressive and more effectual than the audible utterances of the lips, at the same time that they are more safe to the individual who indulges in them! At home professional character has fallen into still lower depths. There medical men condescend in Courts of Law to tear each others' reputations to shreds and tatters, and the following sentences from the "Law Times" will aptly conclude this digression:—

"We cannot, however, part from this subject without reminding

the Medical profession that they are not altogether blameless in this matter. These actions are too often assisted, if not suggested, by rival against rival. At all events, they could not be maintained unless doctors were found willing to go into the witness box to support the suit against their medical brethren. No solicitor would bring such an action without first assuring himself that a verdict was probable, and this he could not ascertain without the aid of one or more friendly doctors, whose evidence could not be easily procured unless it were willingly given. This species of internecine war is unhappily too common among our medical brethren ; we are pleased to be able to say that it is not one of the faults of our brethren of the law."

After an interesting "Retrospect of Cases treated during the Session 1855-56," Dr. Gairdner makes some "Remarks on the Treatment of Pneumonia, and especially on the Treatment by Blood-letting," and then gives us a "Five years' Hospital experience of Pneumonia." Both these papers are well worth careful perusal, and although in this country the disease in question does not occur with such frequency as at home, yet it is the malady in regard to which the moot point of an altered type of disease has been principally argued, and this invests it with special interest to physicians in all parts of the world. While our author shrinks from "discussing the matter as a general doctrine," and seems prepared to admit the abuse of blood-letting in the last half century, he nevertheless attaches due weight to the statements of those who insist on a change of type in disease within the forementioned period, and sums up his observations on the therapeutic value of venesection in the following conclusions :—

"1. Blood-letting is a remedy of great power, the use of which, mainly in consequence of the strikingly beneficial effects witnessed from its employment in select cases, has often tended to degenerate into a vicious routine.

"2. The circumstances in which experience has shewn blood-letting to be thus strikingly useful are—*a*, in the very early stages of acute inflammations ; *b*, in uninjured constitutions ; and *c*, when the disease is attended by marked inflammatory fever, or by urgent symptoms, not indicative of exhaustion, and developed with great rapidity. In the opposite class of cases, viz., where *a*, the early stage has passed ; or *b*, the constitution is impaired ; or *c*, the fever is attended with much debility and exhaustion, or is typhoid in character, blood-letting is always much more dangerous than useful ; and, therefore, its employment should always be founded on a careful consideration of the vital character of particular cases, not on

the mere nomenclature, or pathological character, of the existing disease.

"3. The employment of remedies without such a truly practical selection of cases entirely vitiates the experiment, considered as one of therapeutics, by converting it into the expression of a blind and senseless routine; and, therefore, it is not to be wondered at, but quite in accordance with what was to be expected, that Dietl and others should have found that it was better to leave cases of pneumonia altogether to nature, than to bleed them indiscriminately and to set the results against other cases otherwise treated, with the view of obtaining statistics of mortality under different methods of treatment. Nevertheless, the testimony of Dietl, and other like sceptics, to the efficacy of blood-letting *in relieving symptoms*, must be accepted as part of the evidence in favour of blood-letting in suitable cases, all the more that it comes somewhat in the form of an unwilling admission, derived from personal experience. There is, in fact, an almost complete unanimity of statement upon this point among observers, whether of the school of "expectation," or of the opposite tendency; and this concurrence as to a main fact in the argument is the more remarkable, considering the extreme diversity of theories under which blood-letting has been practised or rejected.

"4. Generally speaking, statistics of the mortality of diseases under blood-letting cannot be obtained in such a form as to admit of comparison with the results of other methods. For, if carefully selected cases only are bled, the cases so selected cannot be set against unselected cases, or against those selected for treatment on a differment principle. And if cases are bled without selection the experiment is incurably bad, and the treatment vicious *ab initio*. The utmost that can be obtained by a therapeutic experiment on numbers of cases is to shew how blood letting modifies the symptoms and the duration of the disease, *in those cases to which it is considered to be truly applicable.*

"5. The carefully conducted inquiry of Louis, and the still more conclusive experiments of Grisolle, have established beyond all question the power of blood-letting when employed near the beginning of the disease, and in fitting cases, to abridge the duration of pneumonia. The experiment of Louis, however, shews with equal clearness the danger of indiscriminate blood-letting, and especially of repeated blood-lettings performed without due regard to symptoms, or at an advanced period of the disease.

"6. There is extreme danger in regulating the use of blood-letting, or of active remedies, in pneumonia, by the physical signs alone; inasmuch as pulmonary condensations revealed by the stethoscope only, are, in a large proportion of cases, quite distinct in their pathology from acute pneumonia, and are indications of debility and exhaustion, rather than of inflammation. It is clearly established

that, for some time after the introduction of the stethoscope, the treatment of pneumonia was most unfavourably affected by the rash application of old methods of treatment to newly discovered diseases. See on this point the *British and ForeignMedico-Chirurgical Review*, No. XXV., p. 217—219.*

"7. Pneumonia as deduced from physical signs, based upon the diagnosis of pathological changes in the lungs, is not at all comparable, statiscically or otherwise, with pneumonia as inferred from symptoms alone. It is quite certain that the modern idea of pneumonia includes a great many cases not known as such to the older physicians.

"8. Besides this, it is well established that the more intense and acute forms of pneumonia, as marked by symptoms, and as described by Cullen and Gregory, have of late years become exceedingly rare; the great majority of cases now observed being unattended by urgent symptoms, and yielding readily to mild treatment, or getting well without treatment.

"9. Hence the modern comparative disease of blood-letting, though unquestionably well founded as a general rule of practice, ought to make allowance for exceptional cases in which this remedy may still be required; and the *criterion* of such cases will be the urgency of the fever, pain, and dyspnæa, and the general strength and condition of the patient; not the pathological condition of the lung as ascertained by physical diagnosis.

"10. The treatment by antimony, by stimulants, and by all other methods in pneumonia, ought in like manner to be regulated by the knowledge of its tendency to a spontaneous favorable termination; and, therefore, is to be addressed rather to the accidental symptoms of urgency, than to the disease in general, as a simple pathological fact."

The general tendency of these conclusions is noteworthy, as confirming a fundamental principle in therapeutics, still too often overlooked,—that of treating each *individual patient* rather than the particular disease, be it pneumonia, or any other special malady, from which he may be suffering. The physician's object should be "the watchful adaptation of means to ends in the individual case," and not a blind and routinal adherence to a certain course of treatment in any disease.

Amongst the questions agitating the medical world is the use of alcohol both in health and disease. On such a subject it is satisfactory to find Dr. Gairdner giving no uncer-

* On Collapse of the Lung, and its results, considered in relation to the Diagnosis and Treatment of Certain Diseases of the Chest.

tain sound, although he is not found in the ranks of Professor Miller's nephalists on the one side, nor among the stimuli-loving disciples ef the late Dr. Todd on the other.

It is a suggestive circumstance that, in reviewing his practice, Dr. Gairdner, contrary to any previous impressions, found the exhibition of alcoholic stimulants had in his hands undergone an uniform increase, and also that among the women in the general ward under his care "the consumption of wine during the entire period of five years was decidedly greater than in the corresponding male ward." Without any preconceived bias in favour of a stimulant treatment, his having been imperceptibly led into the practice pursued, must be regarded as "indicating a really increased confidence in the employment of these agents as remedies." Our author, however, is emphatic in enunciating the principle that alcoholic fluids "are really *stimulants* and *tonics*, i. e., *medicines*—and not food properly so called." "*Adjuvants to food*, i. e., aids to gastric digestion and stimulants of the nervous system and circulation" they may be, and even sometimes beneficial in acute disease, diminishing the frequency of the pulse, restraining the tendency to delirium, "improving the appetite, and producing an amendment in all the general symptoms," but they are far from operating as remedies in those instances in which flushing of the face and increased feverishness have followed their moderate exhibition. And yet such symptoms of exacerbation have been urged as a reason for their increased administration by Dr. Todd, whose practice is found embodied in the dangerous dogma that "it is far more dangerous to life to diminish or withdraw alcohol than to give too much."

We are glad also to see Dr. Gairdner corroborating the statements made by Dr. Peddie, and which we have ourselves verified in practice, that the "suppression of the habitual allowance is not, *per se*, dangerous in most cases; but, on the contrary, extremely conducive to the cure" of delirium tremens and other acute diseases in those addicted to alcoholic excesses.

The use of alcoholics as beverages is discussed by the author with much fairness. He says:—

"We have, for our own part, no hesitation in admitting, that if a clear case could be made out for total abstinence, as a physiological necessity for the human race, or a moral duty for the individual

man, the physician would be above all others bound to adopt it, both by precept and example, as a part of his creed. But if otherwise, we hold that he is free; and more, that he should jealously guard his freedom."

The postulates in the foregoing extract, however, have never been supplied, and it is amusing to find both parties appealing to Physiology in support of their particular views in this dispute. The simple and strictly logical manner in which Dr. Gairdner demolishes the argument put forth by the advocates of the stated use of alcoholic stimutants,—that these prevent or retard the destruction of tissue consequent on vital change, well deserves the perusal of our readers, although the nephalists among their number, will not find him yielding the *pas* to them in the discussion. After conceding a great deal to these, and allowing considerable force to their arguments, he adds:—"But still, amid the tear and wear, the fag and worry, the disjointed and imperfect machinery of human life, we believe that alcoholic drinks are at times a very necessary medicine, at times a very useful help, at times a very enjoyable and harmless luxury; and in none of these respects are we willing to disown them when honestly tested by experience and kept within bounds by reason and prudence. We are content, in this view of the case, to set aside physiological abstractions and theories for future investigation, and to take our stand on the great broad series of facts recognized from the time of Noah downwards, that, at certain seasons "wine maketh glad the heart of man;" that at others it quickens the flagging appetite; at others relieves pain of body or mind, revives for a time the weary frame, and supports the sinking spirits under difficulties and in distressing emergencies. We recognise in these well-known facts the true application of alcocholic liquors; we claim the right of reason to guide us as to their use or abuse; and we decline to place ourselves under any pledge, real or implied, save that of moderation, and of temperance in all things—a pledge, however, which every one who rejects the other is, we think, bound to take, and to keep to the best of his power.

"And, setting aside the question of disintegration of tissue, we can well understand how the arrest or slackening of a particular function, at a particular moment, may be a matter of the greatest importance to the economy. We arrest altogether the function of the brain by anæsthetics, when we

wish to perform a grave surgical operation; we stop the pulse of a limb, to prevent bleeding from a wound; we place a fractured or a bruised limb at perfect rest for weeks, to allow it to heal. Why should we deny to the distressed and dyspeptic stomach (to go no further for an example) in cases where experience clearly guides us, the anæsthetic influence (were it no more) of alcoholic liquors in moderation, during its painful and protracted labours?"

And this we believe to be the right conclusion. Truth and rectitude are equally distant from both extremes. We shall not find either in a rigid nephalism on the one hand, or an excessive indulgence on the other, but in that moderation, which, though an undetermined and uncertain quantity, will be indicated to each man by reason, prudence, and conscience. These are monitors to whom most will listen, and those who wont are not likely to pay any better heed to a pledge of total abstinence.

Passing over an interesting paper on Influenza, we come to four on fevers, but especially those known as Typhus and Enteric or Typhoid Fever—a subject which recent experience in India has served to invest with considerable importance. Dr. Gairdner, like Dr. Jenner, views these as essentially distinct diseases, differing in the potential poison which constitutes the exciting cause of each—in the array of symptoms by which each is characterised—in the degree of contagiousness of the two maladies, and in the structural changes in which each results. One of the four papers contains a History of Epidemic Fever in Edinburgh, and the facts and deductions it contains must prove great difficulties in the way of those who profess themselves unwilling to subscribe to the doctrine of a change of type in disease. The absolute disappearance of the relapsing fever or synocha, the present diminished fatality of typhus, and the marked modification of its type and of some of its leading characters during the last ten years—all point to actual and important changes in the semeiology, and the prognosis too, of this once formidable febrile affection.

A contribution on Cholera next demands our notice, but this only so far as concerns the treatment of that disease—a subject on which the author makes some excellent remarks. "It is evident," he observes, "that for a long time to come the treatment of cholera cannot be fixed by an examination of records. Till it is so fixed, the practice in individual

hands must be regulated in a considerable degree by theoretical or rational considerations; or rather by that peculiar combination of rational and empirical judgment which passes in the world under the name of *common sense*—the tribunal to which so much, besides *cholera*, affecting the interests of individuals and of the community, is in these days referred. Hence the importance to practical men of just ideas of the pathology of cholera, and minute knowledge of its phenomena; by which, and by which alone, they can estimate the success of their own treatment, or that of others, in individual cases." He then passes under review the different remedies which have been recommended—Venesection, Stimulants, Opium, Mercury, Tartar Emetic, Transfusion, Emetics, Purgatives, Chloroform,—and sums up with the conclusion, only too well known in this country, that "the specific for cholera remains to be discovered, and that none of the more vaunted cholera remedies present evidence in their favour so strong as to command an exclusive attention." At the same time there are two modes of treatment, to which Dr. Gairdner adverts as excelling the others in a remarkable degree,—one being the treatment by common salt and cold water internally, followed by a mortality of 20 per cent.; the other, the exhibition of a saline mixture "with copious draughts of cold water," which succeeded in saving 86 per cent. of the cases treated. We need scarcely say that such success is almost too wonderful for credence. It certainly is far beyond anything we can pretend to have attained-to in this country, and the question irresistibily arises as to whether all the cases so treated were really cases of cholera. If they were, the type of the disease must have been much milder, and the subjects of it much better able to resist its attack, than those coming under our observation in this country. The following extract, however, commends itself to our judgment as sound in the principle enunciated, and rational in the practice founded upon it:—"We are most firmly persuaded that cholera, like all other diseases dependent on a specific poison, has a spontaneous tendency to cure after the virus has exhausted itself; and that the treatment will be most securely and successfully accomplished by discarding, in the majority of cases, heroic remedies; by following out the indications afforded by the feelings and desires of the patient; and, as Cullen said of fever, by attending to those conditions and means calculated to "obviate the tendency to death." Now, all that we yet know of

the pathology of this disease tends to ascribe the fatal result in the collapse to a slow asphyxia, induced by the imperfect fluidity of the blood. In proof of this assertion, we would refer to pathological facts, as well as to the wonderful, though too transitory, effect of injection into the veins. We would therefore endeavour by every means to supply fluid to the blood through the intestines, the skin, the lungs, or at least to prevent, in as far as possible, the fluids of the body from being thrown off by these channels. This might be accomplished—1st, by supplying cold water, in abundance by the mouth, as already mentioned, and as dictated by the thirst of the patient; 2nd, by the use of baths of regulated temperature, at least at the *beginning* of the treatment; 3rd, by maintaining the body of the patient *throughout* the treatment in contact with fluid media, or at least with fluid vapour, by means of soaked cloths placed around him, and covered by a sufficiency of blankets; 4th, by surcharging the air of the apartment with vapour, particularly when the external air is dry or frosty." Chloroform is cautiously recommended as an antispasmodic, while frictions, stimulation by liniments, &c., and tight bandages, are mentioned with more confidence; and finally for the restoration of the renal excretion during reaction, the exhibition of Acetate of Potash in scruple doses, "largely diluted and frequently repeated," is specially advised.

We shall not be tempted into any remarks on the paper on Syphilis, but proceed to the succeeding one on "Hysteria, Delirium Tremens, Dipsomonia," in which Dr. Gairdner propounds the doctrine that patients with delirium tremens "*absolutely require as a rule, nothing but careful nursing, i. e., adequate protection and good food, adapted to the state of digestion,* which is usually feeble." And yet he is far from adopting expectancy as a system in this or any other disease. While feeling "confidence in the spontaneous curability" of the disorder in question, a confidence engendered by the observation that "Nature has ways of cure of her own in this disease, which are greater and better than our ways;" he enters into "details of treatment, and on the limits within which the use of particular means is safe or beneficial." After amplifying on good nursing and good nourishment as therapeutic elements, the exhibition of purgatives is commended in cases characterised by a "flushed bloated appearance, a very foul tongue, a mawkish peculiar odour of the breath, fœtid discharges from the bowels, and the history

of a recent surfeit of eating as well as drinking." Of course in such cases the ingestion of nourishment is not an indication, and Dr. Gairdner permits in them the administration of Tartarised Antimony—a remedy which he regards "as on the whole probably superfluous, if not in some cases positively injurious by interfering with the already weakened digestive powers."

Our author takes a most sensible view of the use of opium in this disease,—neither rejecting it altogether on the one hand, nor using it heroically on the other. He is guided in the exhibition of the drug not by the production of sleep absolutely, but by its effect on the pupils; and he urges the use of the fluid preparations in order to obviate accumulation in the bowels—a contingency which may still further be provided against by an occasional recourse to laxatives. Chloroform is alluded to as an useful auxiliary to opium, but one requiring caution in its administration, on account of the alarming results sometimes produced by its inhalation. The concluding sentences on this part of the subject are worth careful conning. "On the whole, I believe that narcotics are safe in delirium tremens only when administered with the comparatively limited object of aiding and seconding the natural cure of the disease; and, therefore, they should be employed with caution, in moderate doses, and only in the later stages. So employed, I have often seen them apparently useful; but often, also, they have failed; so that I can hardly venture to say more of this class of remedies that that renewed trials seem to be still demanded, to enable us to distinguish clearly between their use and their abuse; between their employment as part of a heroic method, and their more restricted use, according to the principles here laid down, and in subordination to the natural cure by diet and regimen, the sufficiency of which, in most instances, must be considered as fully established by experience."

The notion that delirium tremens is generally the result of sudden abstinence after more or less long-continued abuse of alcoholic fluids, is here stigmatised as a popular error, and this dictum accords with our own belief. "The truth is exactly the other way. The disease does not depend on the ceasing to drink, but the ceasing to drink depends on the commencement of the disease."

Time and space however fail us, and we must deny ourselves the pleasure of dwelling on the remainder of the seve-

ral admirable papers in this work. And yet we must make one exception in favour of that on Aneurism, in which the bearing of physiology on the symptoms of the disease, and the light thrown by that science on its diagnosis are prominently set forth. The cases cited are many and suggestive, and from their observation the following conclusions are deduced:—

"1st.—That Aneurism, when accompanied by well-marked angina pectoris, is probably situate in the ascending portion of the arch and near the cardiac plexus of nerves. The natural course of such aneurisms is to burst into the pericardium; or to compress, perhaps open into, the auricles, or the pulmonary artery, causing in many cases cyanosis and sudden death.

"2nd.—That internal aneurism, when attended by laryngeal symptoms, is likely to be so placed as to involve the right or the left recurrent nerve, *i. e.*, either in the innominate artery, or on the posterior and inferior aspect of the arch; in either of which situations, but especially in the latter, an aneurism may cause death by laryngeal suffocation before it is large enough to be readily detected by physical diagnosis.

"3rd.—That aneurism, characterized chiefly by bronchial asthma, and orthopnæa, is probably situate in the commencement of the descending portion of the arch, or, at all events, so as to compress the pulmonary plexus of nerves; and that its consequences may be looked for in the obstruction of one or other bronchus, at first with the symptoms and physical signs of asthmatic bronchitis and afterwards of pneumonia or pleurisy.

"4th.—That aneurism, producing permanent and well marked contraction, or perhaps (in rare instances) dilatation of the pupil on one side, may be expected to arise from the upper and back part of the arch or its primary branches, the sac projecting backwards in the direction of the sympathetic trunk, or of its ganglia, and of their communications with the spinal system.

"5th.—That dysphagia indicates pressure either on the æsophagus, or on the pneumogastric nerve, and a corresponding situation of the tumour. To these principles I would add another, as applicable to the diagnosis of thoracic aneurisms, viz.:

"6th.—That all aneurisms coming within the range of physical diagnosis, and not attended by any of these symptoms, must necessarily arise either from the descending aorta, below the range of the pulmonary plexus, or from the upper part of the arch, projecting upwards and forwards; as it is in these situations alone that a thoracic aneurism can attain sufficient bulk to be discoverable, without involving important internal structures, and leading to very marked functional disturbance."

Chemistry. By W. T. BRANDE, D.C.L., F.R.S.L. & E. Of Her Majesty's Mint, Member of the Senate of the University of London, and Honorary Professor of Chemistry in the Royal Institution of Great Britain; and A. S. TAYLOR, M.D., F.R.S. Fellow of the Royal College of Physicians of London, and Professor of Chemistry and Medical Jurisprudence in Guy's Hospital. London: J. W. DAVIES, 54, Princes Street, Leicester Square, 1863.—Flscap. 8vo., pp. 892.

Ars longa, vita brevis. Some months since we were startled by a friend deliberately asserting that he believed it would conduce to the general advantage of mankind if a prohibition were placed upon the printing of anything but newspapers for the next five years. Of course little more was meant than that the present is a book-making and a book-buying age; but our minds instantly turned to the many unread volumes which grace our shelves, and to the thousands more which we would fain peruse had we time at our command. It happened that at this period we were reading Buckle's History of Civilization in Europe, and were perfectly astounded at the thousands of references to published works to be found in foot notes on every page of that curious book. At first, we thought, is it possible that the author has seen, much more perused, these numerous works? and, secondly, we were led to wonder at so many kindred books having ever seen the light.

The subject of the multiplication of books haunted us, and as a means of relief we began to ruminate upon the many works on individual sciences, connected with our profession, which the various professors of those sciences had thought necessary to be published, either for their own honor and glory, or for the further and due elucidation of the matters which pertained to their chosen subject. With astonishment we counted up, by the aid of memory and catalogues, the numerous tomes which Anatomy has claimed; the many volumes, and papers in the Scientific Journals, which Physiology has called forth; the broad acres of type which Medicine has caused to be impressed; the vast number of pages which have been covered with the details of Surgery, Materia Medica, Chemistry. And after all we were

obliged to content ourselves with the supposition that if these thousands of books did not find buyers they would not find publishers, and if they did not find publishers, neither would they have had authors; and therefore that

"Each, in its proper sphere, fulfils its part."

Although we little expected that the dawn of the year of grace 1863, would be marked by the appearance of a new treatise on Chemistry, yet when this volume reached us, and we found two such names as Brande and Taylor upon the title page, we knew that the authors were dealing with a subject which they thoroughly understand, and we felt constrained to see what they had to say to account for the publication of their work at the present time. And we find an honest, straightforward preface, from which we extract the following:—

"The student of Chemistry has already a large selection of books for his guidance. In the 'First Step' of Mr. Galloway, of about ninety pages, and in the translated 'Hand-book' of Gmelin, as yet incomplete, but filling, at the present date, fourteen octavo volumes, and covering nearly eight thousand pages,—we have the two extremes of English Chemical literature. There are numerous books on the science, which occupy an intermediate position, some, under the title of 'Elements,' treating the subject so profoundly as to alarm a beginner; while others are so filled with symbols, formulæ, and mystical language, as to conceal the great facts of Chemistry in a haze of techinicality.

"We see no reason for adopting an esoteric method of dealing with this science. On the contrary, it appears to us, that, without departing from the true objects of Chemistry, its facts admit of explanation, in a form to be intelligible to any educated man. It is not necessary to the progress of this science, that its language should change with the opinions of every new theorist. The numerical value of atoms and volumes is not of so much importance to a student, as a correct description of the properties and uses of the substances which they represent. On this part of the subject, much labour appears to us to have been wasted in working out an idea, and seeking for some Utopian standard of perfection, in a new system of notation: but in endeavouring to settle contested points on a firmer basis, they have incurred the risk of unsettling every thing. Thus, instead of pursuing the inductive method, and fitting hypotheses to facts, they have introduced a deductive system, by which facts are made to bend to hypotheses; and the elementary composition of bodies is altered, in order that they may correspond to certain artificial types.

* * * * *

"While we do not undervalue the usefulness of a correct language to express the facts and theories of a Science, we have the strongest objection to frequent and capricious changes, in which the good is uncertain and prospective, while the evil is certain and immediate. * * It must be remembered that these changes are not in the *facts*, but in a supposed improvement in the mode of expressing them; and if only partially adopted, they necessarily lead to confusion. Reasoning from the past to the present, it is not too much to infer that a student of Chemistry must be prepared for a new crop of systematic names, and a new classification of elements and compounds, every ten years.

"Our intention in the preparation of this volume has been, not to furnish a Treatise on the Science, but to provide the student, and general reader, with a plain introduction to the subject. With ample materials at our disposal to produce two volumes in place of one, we have studiously endeavoured to compress within these pages, a selection of the more important facts and doctrines of Modern Chemistry. We have adopted for the explanation of these facts, that simple Chemical language which has found acceptance in the Schools and Colleges of Great Britain, France, and Germany, as well as in the best treatises on the Science.

"Having been engaged in teaching Chemistry in this Metropolis, the one for a period of forty, and the other for a period of thirty years, it has appeared to us that, in spite of the number of books, already existing, there was room for an additional volume, which should be specially adapted for the use of students. * * In reference to this book, it may be considered by some, that we have assigned too little, and by others, too much, space to our subject. This, however, is a question of opinion on which persons may reasonably differ. We have taken that which seemed to us to be the proper course; and we trust we have so dealt with the Principles and Practice of Chemistry, that the contents of this book, will prove useful to the general, as well as to the professional, reader."

When such chemists as Drs. Brande and Taylor, with their enlarged experience of teaching, arrive at the opinion that there is room for an additional volume on Chemistry, we can but bow to their decision. As to the necessity of a volume which should embrace all the leading facts and doctrines of modern Chemistry so as to be readily comprehensive to the general reader, we have no doubt. This was impressed upon us some years ago, when we were requested by an intelligent native gentleman, a District Moonsiff, to lend him such a work upon Chemistry as would give him an insight into the leading doctrines of the science. We did not possess any of the popular catechisms which

we knew existed, but we handed him R. D. Thompson's "School Chemistry," and Fownes' "Manual." After a short period he returned them, saying, "I am much obliged to you for the loan of these works, but it appears a very difficult science, for I need an explanatory dictionary at almost every page."

We have looked through this new work, and we really believe that had it been placed in the Moonsiff's hands he would not have experienced anything like the difficulty he professed to have met with.

There is no special treatise on physics in this volume; the more important physical, are described with the chemical properties of bodies, and the reader is referred to Peschel's "Elements of Physics," translated by West, or to Golding Bird's "Elements of Natural Philosophy." Neither are there any pictorial illustrations afforded, for the authors believe that those who require such aid to their studies "will find in the illustrated catalogues of dealers in Chemicals, more correct representations of apparatus, than those which are commonly met with in treatises on Chemistry."

Sixty-nine pages are occupied with introductory matter; and the information therein given, which is certainly couched in very intelligible language, comprises Matter, and its Properties; Crystallization, Dimorphism, and Isomorphism; Chemical Affinity, Solution, Electrolysis; Equivalent Weights and Volumes; Nomenclature and Notation.

The Metalloids are next treated of, and here the account of oxygen is followed by a succint notice of its allotropic form, commonly called ozone, the peculiarities and properties of which are shortly described.

The metals are fully noticed. Directions are given for the qualitative analysis of their more important compounds, and a chapter, occupying fifteen pages, is devoted to the consideration of Photography and its Applications.

Organic Chemistry occupies two hundred and twenty-two pages, and we do not think it would be possible for any one to have given a more admirable summary of the facts of this department of science than is contained in these chapters.

An Appendix follows, containing Tables of Weights and Measures; the English equivalents of French Weights and Measures; Barometric Scale in Millimetres and Inches;

Thermometrical Equivalents; Rules for calculating changes of volume in Gases by Pressure, and by Temperature; Specific gravity of Liquids, Solids, Gases, and Vapours. And a copious Index completes the volume.

It would be beyond our province to enter upon any critical examination of the contents of this volume. We believe that the reputation of the authors is of itself sufficient to warrant us in accepting as facts all the details which are given in the work. It may be matter of opinion whether these facts have been presented in the best arranged and most easily understood manner. For ourselves we have no hesitation in saying that we consider that this work is admirably calculated to fulfil the object the authors had in view in its preparation, viz., to afford the student an elucidation of the most important facts and principles, omitting altogether those details which are either of a controversial nature, or are not yet established on a satisfactory basis.

We venture to predict that the book will become very popular, and before long will be selected by the Chemical Lecturers at the various Medical Schools as the text-book most likely to be useful to their classes, and we should be glad to see it adopted in the Madras Medical College.

Air and Water: their Impurities and Purification. By HENRY BOLLMANN CONDY. London: J. W. DAVIES, 54, Princes Street, Leicester Square—1862, 8vo. pp. 80.

WHEN we first opened this little work, and found Mr. Condy's name upon the title page, and an Appendix of "Simple experiments" with, and testimonials in proof of the value of, the Alkaline Permanganates (Condy's fluid) for the purification of air and water, we felt inclined to look upon it as simply a trade puff. But hard fate necessitates that a conscientious reviewer shall not merely glance at but actually peruse the works which are sent to him for notice, whether the subject be pleasing or distasteful to him. And when we had spent a couple of hours in reading this little book, our first impressions entirely vanished, and we could but feel that Mr. Condy had opportunely produced a short treatise on an important subject, which we would

fain see mastered not only by every medical man, but also by the general public, and more especially by every individual connected, in no matter how remote a degree, with Municipal Commissions.

Mr. Condy introduces himself to the reader in the following prefatory note :—

"The main facts stated in the following Essays, and the reasoning founded thereon, have for many years been floating in my mind in a state of partial development. There they might still have remained, but for the literary assistance of a valued medical friend, whose editorial supervision has been such as might have fairly entitled him to put his name to the work."

The first Essay commences with a notice of the composition of the *Atmosphere*, and an account of the ordinary impurities therein existing. It is mentioned that in the Parliamentary Report which Dr. Leeson, of St. Thomas's Hospital, drew up in 1847, he showed very clearly, that there is no necessary relation between the odorous and deleterious properties of atmospheric impurities, and that merely to deodorise is not necessarily to disinfect. Dr. Leeson classifies the elements of morbid animal exhalations and malarious and putrefactive vapours, as follows :—

Dangerous, but inodorous ; Remittent miasms, Typhoid miasms, Carbonic oxide, Carbonic acid. *Odorous, but slightly offensive ;* Ammonia, and its carbonate, Cyanogen, Sulphocyanogen. *Most offensive, but not infectious ;* Sulphuretted hydrogen, Phosphoretted hydrogen, Carburetted hydrogen, Sulphide of ammonium.

It is certain that the subject of disinfection has been very little understood, and, even at the present day, disinfection and deodorization, are, by the generality of people, supposed to be convertible terms. It is certain that very many of the more highly putrescible of the diffusible contaminations of the atmosphere are rarely very perceptible to our senses, unless when more than usually concentrated, or in the immediate vicinity of their source. And, on the other hand, there are atmospheric impurities, the odour of which is very offensive, which have not as yet been proved to be immediate exciters of disease.

The author of this treatise very properly remarks upon the discovery by Ehrenberg, Pasteur, and others, of infusorial organism, spores of fungi and germs of vibriones, as frequently present in the air of some localities, that it must

not be inferred that these microscopic beings are of themselves sources of impurity or capable of reproducing it.

"On the contrary, they are merely attendants on foulness otherwise derived, and, like confervoid vegetation in water, are, during their processes of life and propagation, sources of the purest oxygen gas. Unfitted for existing except in impurity, they would seem destined by their mode of being, to act as one of the natural means of purification in circumstances of extreme pollution."

Having fully noticed the existence of impurities, the means of purification next comes under notice. Experts in Sanitary Science were long since aware that, by a process of oxidation, the atmosphere converts organic substances exposed to it into simpler forms of matter, but by what particular agency this oxidation was effected was not understood until 1840, when Schönbien discovered that peculiar allotropic form of oxygen to which he gave the name of *Ozone*, and which he proved to be the identical agent in this oxidizing process of purification. A good account of this substance, its origin, and peculiar properties follows, in the course of which it is remarked, that :—

"But for this agency, the atmosphere would ultimately become incapable of sustaining life. Ozone is the great scavengering principle of nature. So opposed is it to all foul and effete products of living organisms, that its presence in any given locality may be taken as a proof of the absence of those impurities which render the air unfit for use, and consequently as sufficient indication of the state of the atmosphere, with reference to its fitness for the purposes of respiration and the maintenance of health."

And a little further on, it is shown that in Condy's fluid, which is a solution of the alkaline permanganates, we have a material capable of affording means not only of deodorizing but also of disinfecting.

"In the natural purification of the atmosphere there is no variation of means according to the intensity of the impurities to be overcome ; one uniform and simple but perfect process meets every case. The transformation of atmospheric oxygen into ozone, by means of natural electrical currents, is nature's sole system of purification. If the production of ozonic oxygen, in the state in which it exists in the atmosphere, cannot at present be considered attainable, except to a very limited extent, we at all events have in the salts of permanganic acid, which Schönbien has shown to be a true ozonide, substances capable in a very great measure of acting a similar part in the limited operations of purification to which we may require to have recourse. While nature has at command an un-

bounded supply of atmospheric ozone with which to maintain the purity of the earth and of the air we breathe, we, in the permaganates, possess a group of bodies that put within our reach, in condensed form, available for use at any given time or place oxygen in the nascent state, which, though artificially produced, is in fact that very purifying agent of nature—*ozone* itself."

The second essay is of a similar character to the one just noticed. It contains an account of the impurities of *Water* and shews that the most dangerous are those of organic origin; and as these substances can be readily rendered inert by the influence of ozone, the alkaline permanganates are recommended as specially applicable to the purification of water.

"Composed of oxygen in combination with manganese, the mildest and most wholesome of the metals, and one or other of the alkalies, the alkaline permanganates can hardly be supposed capable of proving injurious even when, from haste or carelessness, a trace of them in solution or a minute portion of binoxide of manganese in suspension may remain in the water treated; for it has recently been shown that manganese is one of the normal constituents of the blood, and that in some of the very healthiest races of men, such as the Scotch, who are fed to a great extent upon oats, a cereal which contains that metal, it is always present in the body. Indeed, it is extremely probable that manganese is a requisite constituent of the human frame, and that its entire absence is not conducive to health. The nature of the reaction which takes place between those compounds and organic matter is, moreover, such, that when they are used with caution and not in excess, the whole of the metallic ingredient present is separated by precipitation in the solid form, leaving in the water only the alkali which had been in combination with it. As most waters, by reason of a certain portion of carbonic acid which they contain, hold in solution, in the form of bicarbonate, a small quantity of carbonate of lime, the presence of this free alkali is rather an advantage than the contrary, since by neutralizing the excess of carbonic acid it converts the more soluble bicarbonate into a less soluble carbonate, which then subsides as a deposit, leaving an alkaline carbonate in its place."

* * * *

"In certain special cases where the presence of alkaline matter might be objectionable, permanganate of lime may with much advantage be employed instead of the true alkaline permanganates. When this salt is used, the lime, which constitutes its base, is converted into carbonate by union with the carbonic acid held in solution by the water, and precipitated along with binoxide of manganese and sulphur. There then remains a fluid of very remarkable purity,

which, so far as organic matters are concerned, surpasses even ordinary distilled water, which is seldom entirely free from purities of an organic nature."

It is further shown that the permanganates have the power of readily and completely freeing water from lead, iron, and all metals capable of assuming the form of peroxides.

An Appendix follows in which the details are given of several experiments showing the perfectly innocuous character and the thorough efficacy of Condy's Disinfecting Fluids.

As we before said we think this little book is likely to prove useful, as a means of diffusing knowledge of a subject as important as it is generally neglected and misunderstood, and we therefore commend it to our Readers.

We may add, with reference to this work—and that previously noticed—that they are presented to the Reader in a manner reflecting much credit on the Publisher.

Contributions to Dental Pathology. Calcification of the Dental Pulp. Three Lectures on Diseases of the Dental Periosteum. By ROBERT T. HULME, M.R.C.S., F.L.S., Examiner at the College of Dentists of England; Lecturer on Dental Surgery at the Metropolitan School of Dental Science; and Dentist to the National Dental Hospital. London: H. BAILLIERE, 219, Regent Street, W.—1862, 8vo. pp. 76.

THE essay on Calcification of the Dental Pulp, which occupies the first eighteen pages of this little volume, is a reprint from the Transactions of the College of Dentists of England for 1861. Mr. Hulme considers that, although the subject has been noticed by several writers, yet it is deserving of still further attention, and is of more practical importance than it has hitherto been considered. He commences by observing that the crowns of the teeth have no power of reproducing those portions which have been injured or destroyed. He then refers to the means by which teeth become injured; by mechanical attrition during mastication, by the pressure of hard wires and bands in the im-

proper fastening of artificial teeth, and by that very fatal disease, so far as the crown of the tooth is concerned, caries. He puts the question how is it that in some persons caries runs a very rapid course attended by acute pain, whilst in others its progress is slow, and may go on to total destruction of the crown without giving rise to pain of any importance? In order to answer this, it is necessary to consider whether any, and if so, what, changes take place in the pulp or in the dentine.

When the formation of a tooth is completed, the same arrest of growth takes place, as occurs in every other part of the body at the adult period of life. If the tooth remains free from injury or disease, it may continue for years without any appreciable alteration in any of its textures. But *pari passu* with the general induration of parts and tendency to deposition of ossific matter which attends upon increasing years, the pulps of the teeth undergo an alteration of structure. A section through an old tooth shows alterations in the colour and transparency of certain parts of the original dentine, and also an increase in the thickness of the tooth by encroachment upon the pulp cavity. A new tissue has been formed there which is called *Secondary Dentine*, and which is readily distinguished, by peculiar modifications in its structure, from the original dentine of the tooth. The histological characters of this secondary dentine, which vary considerably, are described, but we need not notice them here.

Mr. Hulme proceeds to show that a similar calcification of the pulp takes place when the surfaces of the teeth are worn away by the effects of mastication and the pressure of wires and bands, and that the secondary dentine is "added in anticipation of the pulp cavity becoming penetrated by the wearing away of the tooth." The specimens showing the changes in the cavity of teeth worn away by wires or bands, are very interesting, "in consequence of the very precise manner in which the extent of the injury is defined, and the similar precision which exists in the boundaries of the dentine which is added to counteract them."

He next observes that a change in the dentinal tubes, and a conservative deposition or formation of secondary dentine, takes place in a tooth in which caries is even merely commencing; and specimens are constantly met with in which caries has extended to a great depth on the crown,

but has failed to reach the pulp cavity, in consequence of the addition of this secondary dentine to the interior of the tooth. But besides these, the pulp itself undergoes important modifications, such as lead to the presence of small osseous particles in the cavity of the teeth, which have been particularly investigated by Mr. Salter of Guy's Hospital. Our author says :—

"In the formation of the dentine of the tooth, and also in that which has been named secondary dentine, the nerves and blood-vessels recede from the part in which dentification is proceeding, and it is only the cells of the pulp which are concerned in the process : on the contrary, in the formation of these nodules of ossific matter in the substance of the pulp, all the elements which enter into the formation of this organ seems to be included ; and there results an ossification, which includes alike the nucleated cells, the connective tissue, the blood vessels, and the nerves. This process, therefore, differs essentially from that which results in the formation of secondary dentine, and may be correctly termed *Ossification* or *Calcification* of the dental pulp. The best mode of examining the ossified pulp is to add a small quantity of caustic potash or soda, which, while it renders the parts more transparent, at the same time causes the nerves to become more distinct ; the latter can then be traced up to the osseous mass, and are seen to enter it, or to become involved in it, and again to emerge from it. Mr. Salter correctly says that almost every carious tooth will be found to have its pulp more or less ossified, but I cannot agree with him when he says that it occurs most frequently and to the greatest extent in the fangs. I believe, myself, that the point of greatest ossification occurs nearest to the carious part, and that this process continues to go on so long as inflammation has not been set up in the pulp to such an extent as to produce disorganisation of the part."

A case in illustration is then given. From the facts related, Mr. Hulme draws the conclusion that we should rely upon the remedial process thus set up by nature in our treatment of caries, and thus endeavour to preserve the integrity of the pulp, instead of seeking the best means of destroying it, as is the general practice. Our author says, preserve the pulp if possible and then stop the tooth. "So long as there is a layer of dentine existing over the pulp, as a general rule it should never be removed, even if the dentine is softened nearly to the surface of the pulp." Palliative treatment may save many teeth. A temporary stopping of cotton with a solution of mastic in spirits of wine may be put in and renewed two or three times in the

course of a month. Then the cavity may be filled with cotton soaked in spirits of wine for a second month; and finally the tooth may be stopped with gold. Illustrative cases are given.

This essay cannot fail to be interesting to the Pathologist, to whom the study of Nature's conservative acts must ever be attractive. It is illustrated by three very well executed plates showing sections of teeth exhibiting the changes described in the essay.

The three lectures upon Diseases of the Dental Periosteum contain a great amount of interesting information. But Dentistry has, by general consent of the Surgical Profession, become so complete a speciality that, we fear, we could scarcely interest our readers in this subject.

A careful description of the periosteum of the tooth is given, and the author then treats of its diseases, observing the following arrangement. Inflammation: I. Simple; Acute, Chronic. II. Constitutional; Rheumatism, Gout, Syphilis, Mercury, Phosphorus. Tumours; Fibrous, Fibroplastic, Epithelial, Myeloid, Cytoblastions, Vascular. Polypus. Exostosis; Simple, Vascular.

Each of these affections receives a share of attention, and the appropriate treatment is laid down.

We should much like to see Dental Surgery more cultivated by the general Practitioner. In India, where professed dentists are few and far between, it is not a matter of light importance whether a medical man does or does not "understand teeth." Any one can extract an offending tooth, by hook or by crook; but it is more merciful to save than to destroy, and therefore it behoves every Medical man, so situated as to be beyond the reach of a Dentist, to make himself so far acquainted with the nature, course, and treatment of diseases of the teeth as to enable him to palliate or cure these, before having recourse to the more easily executed *dernier ressort* of extraction. We can assure our readers that Dental Pathology is not surrounded by any halo of peculiar difficulty, and we cannot but think that it rests a great deal with the Profession itself to remove the very commonly existing belief that Doctors know nothing about the teeth.

Health in the Tropics, or the Sanitary Art applied to Europeans in India. By W. J. MOORE, L.R.C.P.E., and M.R.C.S.E., Assistant Surgeon, Bombay, Medical Establishment. London: JOHN CHURCHILL, New Burlington Street, 1862.—8vo., pp. 318.

ACTING on the expressed opinion of Sir J. R. Martin, that a Manual containing the great truths and principles of hygiene and Sanitary Art, should be published "by authority," Dr. Moore has come early into the field, and shown his qualifications for the task, by the production, at his own risk, of the volume whose title we have just recorded. Dr. Moore is already favorably known to the Profession as the author of a "Manual of the Diseases of India," and of papers of considerable merit, published from time to time in the transactions of the Bombay Medical and Physical Society. In the volume before us, if we do not find any thing new, we have the satisfaction of seeing old truths put together in a very readable form. Dr. Moore is evidently, a careful reader, and note taker of contemporary literature, bearing upon his own field of study and research, and while he has freely availed himself of the labours of others, he has been generally candid in acknowledging the sources from which his manual has been compiled.

As Dr. Moore freely admits in his preface, to write a complete Sanitary Manual, the author should be able to refer to and quote all Rules and Regulations, applying to Barracks, Camps, Cantonments, Hospitals, &c., which may be already in force, and to show in what respect, these may come short of the present requirements of Sanitary Science. It is not to be inferred that there are no such rules and regulations in existence, because they are not mentioned by Dr. Moore. The author explains that living at an up-country station, there were no facilities for referring to standing orders, and that under such circumstances he could not undertake to search out and methodise the various General Regulations bearing upon public health.

The task of investigating and reducing into order the Rules respecting Barrack accommodation and Conservancy in the several Presidencies would be one of considerable difficulty, but it is very desirable that somebody should undertake to go through with it. There is no uniformity of proce-

dure. Rules which apply in one Presidency, are not attended to in another.

In some parts of India, Dr. Hathaway's system of dry Conservancy is scrupulously followed, and in others it is only partially attended to, whilst in very many stations we fear, there has been no attempt made to introduce a regular system of Conservancy either wet or dry. A settled and uniform set of Rules, as to the amount of cubical space in barracks—the construction and management of latrines, urinals, wash houses, &c., are very desirable, and should we think form the subject of an order of the imperial Government.

The work before us, without going very deeply into the subject of hygienic laws, will be useful, to the general public, as well as to Military Surgeons whose lot may be cast in India.

A large amount of useful information has been collected, and arranged in the twenty-nine chapters, in which the general principles of sanitation are discussed. These we shall not attempt to describe *seriatim*, or to analyse critically, but proceed to consider such points as appear to require an extended notice.

Notwithstanding all that has been said and written, regarding the preservation of health of Europeans in India, the work proceeds much too slowly. The official mind is slow to receive impressions, and slower still in carrying out schemes, which have been devised for the improvement of the health and *morale* of the soldier. The causes of Zymotic disease, are still abounding more or less in every Cantonment we inhabit. That the sources of disease are not always active, may be very true, but the danger is always imminent, where overcrowding, filth, and a soiled atmosphere, are united. And it seems to us that the risk to life of Europeans in India, will always be great, until we can attack the demon of filth in his strongholds, and carry into practice for the whole of the native population of India, an efficient Municipal system, which will provide for the ventilation of houses and streets, and ensure the removal of all refuse, from the habitations of the people.

The Europeans in India cannot hope to escape the dangers of epidemic sickness, so long as they trust so much to their segregation from the common herd, and enforce Sanitary Regulations only for their own benefit. Disease is no respecter

of caste or race. That which is born and bred in the congenial dirt of a Native town, must be a standing source of danger to the Military cantonment on its out-skirts.

To strike at the root of the evil, we must endeavour to give the natives such a system of hygienic regulations, enforced upon them if need be by pains and penalties, that *foci* of cholera, and fevers and dysentery shall not be permitted to exist amongst them. These views may be considered Utopian, but however they may be laughed at and scouted as impracticable, they are none the less true. Zymotic diseases may be in some degree averted by personal care and attention, but they will always be the greatest drawback to the value of European life in India, until the bull is fairly taken by the horns, and the Augean stable of filth and impurity is attempted to be cleansed by some future Herculean reformer.

The means to the accomplishment of such an end, are however sadly deficient. First, there are the dense ignorance, the prejudices, and superstitions of the masses, the growth of centuries, to be swept away by the gradual spread of Western civilization. The schoolmaster must precede the sanitary reformer. The laws of health must be expounded, and Nature's designs made plain to the comprehension of the people, before they will take an interest in measures necessary to the preservation of health in crowded communities. This knowledge of sanitary laws must necessarily be of slow growth, but the time will surely come, when it will be more clearly attained and acted upon than it is now. The Hindoo people are cleanly after their own fashion, but their sanitary code is so mixed up with religious observances, like that of the Jews of Old, that they fail to appreciate the true significance of the purifications that form so large an item in their daily existence. So that while the mere touch of an out-cast is pollution to the Brahmin, the latter is content to live in an atmosphere poisoned by his own, or his neighbour's, filth, and esteems himself none the less highly for the contamination. When the philosophy of these things is better understood, we may fairly expect to find the people of the country more alive to their own interests, and less unmindful of the care of health and life.

The location of troops on the outskirts of large native towns, seems to have been the practice in India, ever since the establishment of the British Rule. Of late years

sites for barracks on the hilly regions of the country, have been chosen, but in all these cases the native bazaar has sprung up faster even than the barracks for troops, and the segregation of the Europeans from the contaminating influences of native filth, has practically failed. The Mountain Sanitaria, as Dr. Moore shows, are one and all suffering from defective conservancy arrangements, which render nugatory the otherwise bracing effects of the cool and invigorating mountain air. Not many months since in a visit to the Neilgherry Hills, we saw in the hospital at Wellington some half dozen cases of as well marked typhoid fever (with the characteristic rose spots appearing in successive crops), as it has ever been our lot to meet with in the Hospitals of Great Britain. The troops here have magnificient barracks, ample space, and a fine climate, but the conservancy of the station, is not what it should be, and the result is seen in an outbreak of typhoid fever. At Ootacamund, the filthy condition of the native bazaar, the contamination of the waters of the lake, and the neglect of cleanliness about private houses, are all causes tending to make the place unhealthy.

Drs. Stewart and Rogers, the present Medical officers of the station, are unanimously in agreement on this point, and in their annual report for 1862, on the health of the station, have no hesitation in declaring the unusual amount of sickness during the year, to have resulted entirely from neglect of Sanitary requirements. Thus, whether Europeans are stationed on the hills, or plains, the *excreta* from their own bodies and those of the native attendants are the greatest source of danger to health and life.

It is characteristic of the tendency of scientific medicine of the present day, that the near and obvious sources of disease in mankind, viz., filth and impurity of air, soil, food, and drink, are beginning to be more generally recognized at their real value. Hence we see that in Civilized Europe the appointment of "Health Officers," to seek out and cause the removal of the more fertile causes of sickness, has become a matter of every day occurrence, and wherever these means are adopted, certain results are found to follow. Death ratios begin to decrease, and the proportion of the number of births to exceed the deaths. The value of life amongst all classes is improved, and material wealth and prosperity follow in ordinary course.

In India we have not yet succeeded in impressing upon the Rulers of the country, the vital necessity of such measures. There have not been wanting men who, like our author, have raised their voices in loud and indignant protests, against the shameful disregard for human life, which is still so common in India, but the warnings have been unheeded. Throughout the length and breadth of the country there is not we believe such a thing as a "Health Officer," one whose sole public duty is confined to the prevention of disease. The field for improvement is one of gigantic proportions. There is not a Collectorate, or even a talook in the country where the services of such an official might not become of untold value to the State, and even as a commercial speculation, setting the salary of the officer in one scale, and the value of the lives saved in the other, the gain to the material wealth of the country would be very great.

We should like to see some evidence of the admission of the truth of these views in high quarters. We shall not find it in the practical behaviour of the Government, towards the Medical services. The purely Indian Medical establishments are, it seems, to be permitted to die out. It has been said that there are too many Medical Officers in India, and the authorities appear to be acting upon this view of the case, since they have ceased to recruit their Medical establishments, and the Horse Guards have undertaken to fill the vacancies in the purely military ranks. The health of the army is to be cared for under the new regime, but the millions of the people who contribute to the wealth and material prosperity of the country, would appear to have been entirely lost sight of, and so far from any provision having been made for their Sanitary welfare, they are to be left to live and die like their forefathers, their homes to be desolated from time to time by pestilence, and no helping hand held out, to lead them out of the Destroyer's paths.

If this policy is persisted in, we have no hesitation in declaring that the time must come when India can no longer be a place of residence for Europeans. If, in our selfish disregard of the masses of humanity around us, we seek only to ensure our own safety, we shall surely fail of attaining even that object. As we sow, so shall we reap, and if we permit the natives of the country to live in filth,

and to breed pestilential diseases without striving to check them in the earlier stages of their development, so surely will the avenging Nemesis fall upon the conquering race, and leave his permanent marks in the thinned ranks of the European army. Sanitation must have a wider range than the mere attempts at prevention of disease in the British army, if the art is ever to become of practical benefit, in diminishing the risks and dangers of tropical service.

In giving utterance to these views, we do not wish to depreciate the efforts which have already been made to improve the conditions of servitude of Europeans in India. In an article which appeared in the Tenth Number of this Journal (*Review* of *Ewart's Vital Statistics*,) we attempted to show that very great and important results in the saving of human life, had already followed the introduction of improvements in Barrack accommodation and Conservancy, and in the Dress and Diet of the soldier.

The results have been so encouraging that we may anticipate a still further reduction in Mortality and Invaliding, when the application of the principles of Sanitary art, to the preservation of health in European troops, shall have become the rule, in all Indian stations, instead of the exception. But when all is said and done, the occupation of India will be a continual struggle with the unseen enemies which walk in darkness, and which are more destructive to our forces than the deadliest battle field, unless we are prepared to wage war into the adversary's camp, and attack the strongholds of cholera, dysentery, and fever, at their citadels. By great personal care and precaution a large amount of preventable sickness may be kept in check, but the germs of mortal disease will none the less be lying in wait for the enfeebled or debilitated, waiting only for a fitting opportunity of manifesting their presence. This must continue to be the constant danger of the European in India, so long as India continues to be the hot-bed it now is of malarious and epidemic diseases.

A great deal has been done of late years to better the Sanitary condition of the European soldier in India, but to our mind much more remains to be accomplished.

As regards accommodation, many improvements have been made in barracks and as a rule they are no longer the dens of impurity they once were. Barracks as at present constructed to hold from 80 to 100 men, are all very well so

long as ventilation is thorough, and the superficial area is not too densely crowded, but in our opinion smaller buildings, to hold not more than twelve or eighteen men would not only be cheaper to build, but would be found better suited to keep the men in health. The exhalations from 80 or 100 men on a close sultry night, must tend very materially to soil the air of a large barrack, and to predispose the residents to attacks of epidemic disease. This source of danger would be better obviated in smaller buildings spread over a wider area than the ordinary barracks now occupied. The greater immunity which officers enjoy from epidemic diseases, is due probably in some degree to their living in separate houses, with plenty of open space around the buildings, instead of being closely packed in barracks.

The occupation of the soldier in India, is tedious and monotonous to a degree, and the absence of innocent amusements wherewith to wile away his leisure hours, has a great deal to say to the repletion of Hospital wards. Much has been done to benefit the soldier in this direction, but notwithstanding the institution of regimental libraries, and reading rooms, of work shops and gardens, time hangs heavily upon his hands, and idleness is his chief bane. Soldier's clubs should be more encouraged, and it would be well if every man were taught and required to work at some handicraft for a part of each day. Some portion of the parades and drills now falling to his share, we submit might be dispensed with without injury to discipline or efficiency. To a soldier who really knows his work these monotonous exercises only serve to produce disgust and weariness of the profession of arms.

As regards the rations of the soldier we have no hesitation in agreeing with the remarks of His Excellency Sir Hugh Rose, that the quality of the meat, bread, and vegetables in India, is often decidedly inferior to that which the Government has laid down, as the soldier's due.

Nothing tends more to the derangement of health, than indigestible food, and coarse slovenly cooking of the same. The provision of bad meat in Cantonments is we fear of very common occurrence. We do not mean that it is utterly unfit for food, but that it is badly fed, tough, skinny, and wanting in succulent juices, and nourishing power. Now if sheep and cattle farms, were established in the neighbourhood of all European stations, and steady men of the Mili-

tary establishments, employed to superintend the cultivation of the best grasses, and the feeding of the cattle required for the food of troops, all complaints on this score might be avoided. Natives will not fatten cattle for the market. They do not understand the process, and even if they did, it should never be entrusted to their sole management.

The pig, if properly fed, would furnish a wholesome and suitable change from the eternal beef and mutton, mutton and beef, which now form the staple animal food of the soldier in India. Bazaar pork is no doubt often unwholesome, but the men eat a great deal of it notwithstanding.

If they had a better fed article served to them as a ration, they would probably refrain from buying the inferior.

If grazing farms were established in connection with all large Military Stations occupied by European troops, these would also afford opportunities for improving the breeds of poultry, and adding variety to the sick soldier's diet. The "chicken," or "half a fowl" ordered for a sick man, is generally a tasteless, insipid, and stringy affair, quite unsuited for a weak and delicate stomach. The Cochin China, Spanish, and Dorking fowl thrives in this country almost as well as the common *Moorghee,* and the difference in value for table purposes, we need scarcely insist upon.

But supposing that an improvement in the quality of the rations is too great a step in advance, it cannot be denied that there is a wide field for improvement in the preparation of food for the table. It has been often remarked that a Frenchman would fatten, where an Englishman would starve, and this because the one understands how to convert unpromising materials into digestible food, and the other is generally as ignorant as a child unborn of the mysteries of the culinary art.

The practice of entertaining native cooks for European troops, only tends to make the men more helpless, in the utilization of their rations.

The whole system needs reform, and we should like to see more generally introduced the improved cooking ranges invented by Grant or Duff, each company should have an apparatus of this kind, presided over by a trained European cook. We would even go further, and hint, that it would be a wise economy to appoint an *artiste en chef* to every Euro-

pean Regiment, whose sole duty should be confined to the superintendence of the cooking of the men's rations and the introduction of such variations in the daily bill of fare, as the rations permitted.

We would have such an officer, moreover, to be in charge of the Hospital diets, and responsible for the same being served to the sick, in a cleanly and appetising condition. Few of us who have had practical experience of the coarse and untempting food now supplied to Hospitals, and the inability of the Hospital kitchen to meet the capricious fancies of the sick man's appetite, but have yearned for the assistance of a cook with genius in his soul, to aid us in supporting the flagging vital powers of the patient exhausted by disease. With a well trained and scientific cook for each Regiment, to instruct and superintend, and the whole of the work performed by the men themselves, there should be none of that helplessness in domestic matters, which is now so prevalent in the ranks of the British Army. A soldier must eat every day, though he may be called up to fight but once in his life, and to preserve him in health and efficiency he should be shown how to prepare and cook his food, as well as to take his part in Military evolutions. If his education in either of these respects has been neglected, he cannot be considered fully effective for the contingencies of active service in the field. If we dwell at some length upon the importance of good cookery, in connection with the health of troops, it is not without reason. In the latest report on the Male Military Orphan Asylum in Madras, the Surgeon of the institution Dr. Duff, says:—

"During the last half year, a cooking range on the plan proposed by myself, and now extensively used for public service, was introduced into the Asylum with the happiest results. Food is now cooked daily in seven different shapes, and the whole number of boys (226) divided into as many messes, so that each individual boy has a separate dish daily during the week. To this variety in diet and to the fact of its being always thoroughly cooked, may be fairly attributed the diminished number of admissions into Hospital during this half year, as compared with similar preceding periods."

The reduction in the admissions, and in the daily average of sick was in fact rather more than one hundred per cent., and we further read that for a period of ten days together, with 226 boys present, there was not a single case in Hospital—a circumstance unprecedented in the Annals of the Male Orphan Asylum, in all the years of its existence. Now

if good cookery and a varied diet, have been instrumental in bringing about these satisfactory changes, what may not be done to improve the chances of life of the European soldier, by carrying out the views we have advocated!

The *quantity* of the rations now supplied we believe to be ample, if not in excess of the actual requirements, and with scientific cookery, to present them in a palatable form, the soldier would have less inducement to spend a portion of his surplus pay, in the purchase of unwholesome pork and bazaar trash, than is now too often the case. How much of the fatal liver disease of the country is due to overfeeding, and over-stimulation of the digestive and assimilative functions of the body, we are scarcely yet in a position to determine, but it is most probable from what we do know of the subject, that an excess of food of an unsuitable character amongst other causes, does tend very materially to the degenerative action of the liver, which so often ends in abscess.

Dr. Moore seem to think that "in the case of soldiers the most probable cause of the degeneration is to be found in the abuse of alcoholic liquors, and intemperance." But we have our own reasons for not agreeing implicitly in this view of the case, and have also the weight of Dr. Morehead's opinion to back us, when he says, "the evidence that intemperance in drinking exercises a particular influence in the production of hepatitis is by no means conclusive."* If the abuse of alcoholic liquors predisposed to the usual form of hepatic abscess, we should naturally expect to find the disease more prevalent amongst drunkards than in the temperate. From an examination of the returns of sickness and mortality in the Madras Artillery (average strength about 2,000) for a period of nine years, classified according to the habits of the men, as "teetotallers, temperate, and intemperate, we gain the following results:

	Hepatic diseases.	
	Admissions to Strength.	Deaths to Strength.
Teetotallers.....	4·91	0·0
Temperate.....	5·50	0·35
Intemperate.....	8·60	0·29

With regard to the class of teetotallers, they were so few in number, and influenced so much by other causes, for example, a large proportion of them being married men, and living with

* Researches on Diseases of India, Vol. ii, p. 7.

their families *out of barracks*, that no deductions can be safely made with regard to their apparent immunity from serious liver disease.

But in the other two classes, although the admissions have been the most numerous in the intemperate class, the mortality is seen to be less than in the temperate, proving that though drunkards may be more often in hospital than temperate men, with biliary derangements, or other functional diseases of the liver, they are not peculiarly liable to the common liver disease of the country, which is so fatal to Europeans. The liver of the drunkard is generally found to be diseased, but the most common pathological effect of alcohol on that organ, here as in other countries, is the hardening and contraction of the fibrous structures, to which we apply the term cirrhosis. The enlarged fatty, and waxy liver is found quite as commonly in the temperate, as in the intemperate according to our experience. Some further evidence on this subject we have obtained from an examination of the recorded cases of Civil and Military officers dying in this Presidency during the last twenty years. Six hundred and eighty-four fatal cases have been carefully examined and tabulated, and with regard to hepatic abscess, the proportion of deaths to the total mortality were found as follows:

Abstemious and Temperate..... 11·17 per cent.
Free and Intemperate..... 9·85 ,,

Here again the mortality is less in the drunkard than the temperate class from liver disease, and the two series of records, relating as they do to individuals occupying different social scales, tend to prove that the connection between spirit drinking and hepatitis, has no real existence.

We do not suppose that our readers will misunderstand us, and infer that we consider the intemperate livers to be wise in their generation. Drunkards die with terrible rapidity from their own peculiar diseases, but in our opinion, after much labour in the examination of old records, and anxiety to consider the question in all its bearings, hepatitis or hepatic abscess are *not* necessary consequences of an intemperate use of alcohol.

Dr. Moore alludes to the case of the French at Pondicherry, amongst whom hepatic disease is said to be of rare occurrence. The French in India no doubt live more suitably to the climate than we do. They are better cooks, and perhaps eat more sparingly of animal food, while the light Bor-

deaux wines which they consume, are probably less calculated to derange the digestive organs, than the strong bodied ales and porters, and the fiery arrack, which we supply to the British soldier.

A great deal has been said and written regarding the necessity of the spirit ration supplied to European troops. The principles upon which that supply is regulated we regard as erroneous, and requiring modification; but like Dr. Moore we are not prepared to dispense altogether with it. The greatest evil perhaps has been, that young, unformed boys have learnt the habit of tippling, solely from having placed before them, as it were, six ounces of strong alcohol daily, in addition to a pint of malt liquor. The substitution of beer and porter in part for spirits, has been accomplished at an enormous expense for freight, carriage, and waste, but we confess to being very sceptical as to the utility of the measure in a sanitary point of view.

Malt liquor at home is a very different affair to the strong-bodied ales and porters brewed for the Indian market. To preserve these beverages through the voyage they must be brewed strong, and with an excess of fermentable matter in them. Unless malt liquor be perfectly sound, it is apt to derange the digestive organs, and predispose to disease. In ordinary Medical practice in India nothing is so common, as to hear that a "bottle of beer not quite sound," has been the cause of the attack of diarrhœa, or dyspeptic symptoms. Very few persons, who engage in sedentary occupations, and who take but little exercise, can drink beer without suffering from subsequent discomfort in the shape of disturbed nights, bad dreams, flatulence, and often bilious purging and a feeling of prostration for the whole of the next day. Beer drinking amongst the better classes, officers, merchants, &c., may be said to be falling into disuse, and in nine cases out of ten, to the manifest improvement in the health of those who abandon the practice.

Dining not long since with a large mess party at a station in the Mofussil, where *ice* had been recently introduced, we were much struck by the change of habits and customs. Looking down the mess table, the sight of a beer glass was the exception instead of the rule, as it used to be ten years ago. Most of those present drank claret and water, or plain iced water, but out of a large party of nearly fifty, there were not half a dozen beer drinkers.

A friend of ours, who has spent many years in the Straits Settlements, informs us that the European community there have almost entirely discarded beer, as unsuited to the climate, and have taken to light French wines instead. In the Presidency town of Madras, the use of beer has greatly diminished of late years. In the dining room of the Club, for one person who may be seen taking that beverage, there will be two or more, who give the preference to "claret cup," or some of the light wines.

The change in habit is more observable in the better classes of society than elsewhere, for the reason that agreeable substitutes for beer are more within their reach, than is the case with the artizan or soldier.

The change is not to be regretted, and it probably takes its rise in a physiological necessity. A perfectly pure and sound beer, is probably the least objectionable form of alcoholic stimulant, but the attainment of such an article is at all times difficult, and people are beginning to tire of experimenting in their own persons, with every fresh batch of ales coming into the market. The strong beers of Bass and Allsop, contain besides a large per centage of alcohol, a certain amount of saccharine and extractive matter. If the beer so constituted could be taken into the stomach before any chemical change had commenced, it would probably be perfectly wholesome when taken in moderation, but here is the difficulty. If bottled in Europe and drunk within a reasonable time, it is generally perfectly sound, but it soon deteriorates by keeping. If bottled in the country, the sugar, or starchy matter added to make it "get up," induces a secondary fermentation, which renders it an unsafe drink for delicate stomachs.

The most suitable beer for India, according to our own experience, and one which we are glad to see is coming into more general use, is that brewed and bottled by "*Tennent*" of Glasgow. It contains the minimum of saccharine and extractive matter, a good deal of hop, and only a moderate quantity of alcohol. A "bad bottle" of this excellent beverage is but rarely met with. So far as we know, this beer is not imported in casks, probably from its being too light to keep for any length of time, except in bottle. We know many persons who are unable to drink the stronger ales of Bass and Allsop, who feel all the better for the use of "Tennent's." Old beer drinkers complain that it has no strength,

and a lady once remarked to us that she might as well drink so much water for the effect it had upon her head, evidently under the impression that the worth of good liquor was to be adjudged by its intoxicating power!

There is no doubt that good beer might be brewed in India with care and precaution. At Mussourie a brewery has for some years been established. Lieut. Colonel Ouchterlony of the Royal Engineers has shown by actual experiment that good wholesome malt liquor can be brewed or the Neigherry Hills, at a moderate cost. More recently, Colonel Briggs of the Royal Artillery has experimented with the patented "grain stone" at Bangalore, and produced a considerable quantity of wholesome beer and porter, which is said to be much relished by the troops.

The importation of the solid materials of beer, would be an immense saving in the cost of freight and carriage, but there is really no reason why good barley and hops should not be grown in the country, if it should be thought desirable to extend the use of malt liquor. The natives of the country are gradually acquiring a taste for our beer, and it is certainly better that they should follow our example in this particular, than in resorting to brandy and gin. On the Neilgherry Hills, beer is brewed and sold chiefly to the natives, who seem to appreciate it highly.

We look upon the intemperance which still prevails to some extent amongst the European Troops in India, as a thing which in course of time will die out. It is not to be suppressed by restrictions as to the amount of liquor which is sold at canteens, but by improving the social position of the soldier, and treating him as not altogether devoid of reason or intelligence. Idleness being the soldier's chief bane, every means must be used to employ his leisure in innocent and useful pursuits. Man is a thirsty animal, especially in a tropical land, and the sensual gratification experienced in swallowing a cool draught of any fluid, must not be overlooked in reference to this question. We have alluded to the substitution of iced water for beer amongst a body of young officers; now if canteens were supplied with ice-making machines, and the means of manufacturing aerated beverages, we have great faith in the idea that innocuous drinks, well cooled to gratify the palate, would be preferred to those of an alcoholic constitution.

If we desire to wean the soldier from the habitual use of his

drams of arrack, we must give him what he will consider an equivalent, and in a country like India, nothing could be more grateful to his sense of taste than iced lemonade, or soda water, with perhaps a small quantity of arrack or wine added. Now these aerated beverages could be made and sold in canteens, for about half an anna per bottle, and still leave a margin for profit. Ice machines it is said can be imported and worked profitably by charging the same trifling sum for a pound of ice. With health giving luxuries so easily attainable, it seems to us that the desire for the immoderate use of strong drinks would soon disappear. We say immoderate use, because we are not of those who decry the value of alcoholic fluids, when used in moderation.

In the fearful heat, and tissue wasting period, of an Indian Summer, we believe that health and strength are best supported by using these agents discreetly and moderately. Beer, by those who can digest it, light wines, sherry, or madeira, by those who prefer them to beer. We should like to see the experiment tried of introducing Bordeaux or African wines in canteens, and using then as substitutes for beer and spirits, by those who prefer them. The cheaper clarets would not cost much more than beer to import, and as a rule would be more beneficial to health.

The pure spirit ration should we think be discouraged as much as possible, but it might be advantageously used from time to time on medicinal grounds.

At the period of marching through malarious districts, in cholera camps, and generally in active field service, we should advocate the freer use of alcohol, for, strange to state, it is the teetotallers and temperate men who suffer most on such occasions from diseases of the Miasmatic class. The drunkard, whose body is saturated with alcohol, is less frequently a victim to fever, dysentery and cholera, than he who abstains from intoxicating drinks.

The statistics which have been published on this subject are valueless. We hope shortly to be in a position to bring it before the profession, with figures which may really be trusted. Mr. Waring's table which has been so often referred to by the advocates of teetotalism, and others, was derived from the returns of a single year—a period too short for the purpose. A tabulation of the returns for a series of years, shows that many of the conclusions drawn from the imperfect data of that table are unsound, and only calculated to mislead.

Without therefore agreeing fully with our author, in all that he has said on the subject of intemperance in alcoholic drinks, we can fully endorse his views as to the unsuitableness of total abstinence in a tropical climate. His remarks on this subject, and on the smoking of tobacco, must commend themselves to all reasonable and right thinking men.

We hope ere long to be able to welcome a second and enlarged edition of Dr. Moore's very useful book. We have not space to discuss its merits chapter by chapter, but our readers and the educated public generally, would do well to procure it for their libraries, as an excellent *resumé* of the present state of our knowledge of the sanitary art, as applied to a residence within the tropics.

On the Treatment of Gonorrhœa without Specifics. By J. L. Milton, Second Edition. London: J. W. Davies, 1862, 8vo., pp. 131.

The author of this Volume, the First Edition of which is doubtless familiar to some of our Readers, has been long held as one of the authorities to be consulted in cases of the disease which forms the subject of his present enquiry.

Regarding the book as one of considerable interest we are unwilling to dismiss it with merely a few words of well merited praise. We are, rather, anxious to direct attention to it (without however entering in full upon the critical discussion of the very numerous and important topics to which it refers) as an able summary, of the practice usually adopted in the treatment of Gonorrhœa, and as an exponent of that advocated by Mr. Milton.

In a preface to which we shall again allude, the author proposes as the object of his work—"to prove that all forms of Gonorrhœa, however complicated or inveterate, may be cured without the use of the so called specifics." How far he has succeeded in his attempt we shall briefly proceed to show.

The plan of his Book may be said to be as follows:—*Part I.* Embraces general remarks on Gonorrhœa, including remedies in common use, and the line of treatment proposed by the author: *Part II.* Enters upon the discussion of the complications of the disease which *do not* interfere with its cure: *Part III.* Includes observations on the more severe complications, or those which *do* interfere with the

cure, of the disease: while Gleet and inveterate Gonorrhœa and the allied conditions are considered in *Part IV.*

Passing over some general remarks upon the immense variety of the medicines now and formerly recommended, and a brief history of the treatment of the disease, the author (p. 7.) considers in detail the various modes of cure now most frequently employed, and most commonly relied upon. The *Expectant plan* is first considered and cordially condemned, and if for no better reason, because it is so likely to result in the formation of *stricture.* As to the connection between these two diseases, as cause and effect, Mr. Milton sums up the conclusions at which he has arrived, as follows, "(1) that, strictures arise in persons, who never had Gonorrhœa, and in some, at such an early age as to preclude all probability of Gonorrhœal infection; —— (2) that occlusions of a similar character occur in mucous canals without being preceded by any inflammatory and purulent discharge; (3) that, the progress of the stricture seems to bear no sort of proportion to the duration or severity of the Gonorrhœa; (4) that, the proportion of patients attacked by stricture to those who suffer from Gonorrhœa, is extremely small; and, (5) that Gonorrhœa appears to develope the tendency to strictures, in persons who would otherwise never have been assailed by it." That the foregoing conclusions are correct we ourselves believe, and although they are not possessed of any remarkable novelty yet they are not without some interest.

The *Internal remedies* usually employed in the cases of Gonorrhœa are next reviewed and *Copaiba* is justly condemned for reasons somewhat similar to those set forward by Dr. Montgomery in a former volume of this Journal. But, if Copaiba is to be employed, the author recommends to favorable notice Mr. Thorne's extract of it wherein the valuable portion of the drug is alone used, and the *useless and nauseous residue* is discarded. *Turpentine* receives only moderate praise; and Cubebs is still less favorably commended. *Antiphlogistic treatment,* and *Purgatives,* are condemned as likely to lower the system without acting specially on the disease; but *Aperients* are considered by Mr. Milton as most valuable adjuncts to injections, and as sometimes, thus combined, capable of effecting a cure without any other internal remedies. The value of Liquor Potassæ (especially in females,) and the best means of

employing *Spir. Æther Nit.* and *Potassæ Nitras* are considered: the superiority of the former of these, to all other diuretics, and the occasional inertness of the latter preparation, are duly noticed.

We pass over, intentionally, the remarks of our Author regarding the application of *cold* and *very hot* applications to the penis, merely observing that in many cases in which we have tried them we have found both species of application productive of good, but the *very hot* fomentations is most calculated to relieve ardor urinæ. The simplicity of the application is strongly in its favor.

One of the most interesting sections of this part of the book is devoted to the consideration of injections and other direct applications to be brought in contact with the diseased structure. With reference to the first of these topics the Author thus disposes of a question frequently put to Practitioners by affrighted, or anxious, patients. He says, (pp. 24, 25.)

"Before proceeding to discuss the comparative value of any of these injections, I wish to say a few words about a question which I suppose every surgeon living has had to answer more than once in his life. "Don't injections bring on stricture and swelled testicle?"

"To this pertinent inquiry the most unhesitating denial may be given. Stricture occurs by far the most frequently among those who have been treated only with medicines, or with medicines and injections given in a very inefficient manner, and is so rare among those treated with injections properly given that in the course of ten years I have never been able to trace a single case to this source.

"One would suppose that those surgeons who object to their use on this ground would have adduced some facts in proof. All these disorders are so common that with ordinary industry, any writer might have accumulated materials enough to support his views. But, instead of doing this, which might entail the inconvenient risk of being converted to an opposite opinion, they content themselves with the safer plan of detailing their fears of *what ought to follow;* they don't appear to dream of relying solely upon a critical analysis of what *has followed* the use of such means. However, it is gratifying to find that all writers are not so prejudiced: Mr. Whately, M. Ricord, and some others who are to be weighed rather than counted, have convinced themselves that strictures do not result from injections, though even M. Ricord is afraid of giving them when the testicle is affected, a fear quite as chimerical as the other.

"If injections bring on orchitis, how is it that they scarcely ever produce this effect when given within the first fortnight from the

breaking out of the disease—the very time when they induce the most pain? if their strength is the object to be dreaded how does it happen that in the cases mentioned in Table 3 where eighteen persons were treated with injections of nitrate of silver, ten grains to an ounce, no symptoms of orchitis were induced in any instance —a result I have since repeatedly verified?"

In support of this statement, the Author adds that he has used Nitrate of Silver injections several thousands of times, *and has never known orchitis or stricture arise from doing so.* The testimony of Mr. Johnson is also quoted, to the effect that stricture occurs more frequently when injections were not given. In connection with these general considerations, the Author next considers in detail the substances most frequently employed, or most strongly recommended, for direct application to the diseased urethra.

On these, however, we cannot dwell, but pass at once to the section of the work which must be considered as purely original: we refer of course to the general outlines afforded by the Author of his *proposed plan of treatment.*

Four points engage his especial consideration, and to these severally we shall briefly refer.

He first asks—for what cases is *abortive treatment* suitable? and, how is it best effected? To the first of these questions he replies—where great pain and discharge have not been set up: where the attack is not a first one and is not severe: and where immediate cure is desired *at any risk.* As to the *modus operandi* the Author combats a popular opinion that M. Ricord uses strong injections of Nitrate of Silver without auxiliary treatment, whereas, in his published *Traite Pratique,* this distinguished Surgeon limits the use of strong injections of this salt to those cases where pain and inflammation are not present.

Mr. Milton lays down a detailed plan of abortive treatment; which consists of a 5 gr. solution of Nitrate of Silver followed by calomel. Seidlitz powders or Black dose are next given till free purgation is induced, and after each motion a solution of Sulphate of Zinc of the same strength as that of the Nitrate of Silver, or somewhat weaker, is to be used, and kept in contact with the urethra until a sense of burning is felt. The same process is adopted for the following day or two, (the Zinc injection being used after each micturition) and the result of the whole is rapid subsidence of the disease, and cure in one or two days. To be successful, abor-

tive treatment must be so *at once*, if it is not so then the patient must submit to the ordinary treatment recommended by our Author. This latter, the second special subject of investigation, consists in certain salts of potash, with rhubarb, and injections so combined, graduated and applied as to act permanently, but without much pain, over the whole of the diseased surface. The form of potash upon which the author relies most confidently is the *Acetate*, and to five drachms of this, three of Spt. Æther : Nit : is to be added, and of the whole, in a six ounce mixture, an ounce may be taken twice or three times daily. After some additional, and very valuable, remarks, on the addition of *Rhubarb*, and the best mode of its administration, he proceeds to consider the species of injection best suited to the differing degrees, and stages of the discharge.

To this portion of the work we can only refer in general terms. For we do not consider it just to the author to attempt to epitomise his experience and remarks, and to reproduce them in extenso would be equally unfair to him and impossible for our limited space. But of the value of the following remarks we have been long convinced—and they point out one of the most frequent sources of failure in the attempted cure by *injection*.

"All the syringes I have seen are far too long in the barrel, and hence somewhat unmanageable. It is not every person that can stretch his hand so as to reach the knob of the piston and at the same time grasp the cylinder firmly. The consequence is that the instrument is awkwardly held and often dropped and broken; *moreover*, the piston often fits badly to the cylinder, so that a great deal of the fluid escapes backwards; and if this be obviated the patient injects far too great a quantity, thus causing unnecessary pain and distention of the canal, to which perhaps much of the michief said to have been caused by injections might with reason be attributed." (p. 38).

A good many very practical and useful suggestions and observations are recorded by the Author on the method of applying Injections, and to these we gladly direct attention; for we believe that it is to the faulty application of these—much more than to any unsuitability in their composition—that much of the disfavour with which they are regarded, is due.

Gonorrhœa in Women, is, lastly, noticed, and some very judicious remarks are also made as regards the dietetic

regimen to be adopted by patients of both sexes when labouring under the disease.

In the Second part of the work an enquiry is instituted as to complications likely to occur in connection with the disease, but which do not impede cure. Under this class, *Scalding, Chordee, Sympathetic Bubo, Irritable Bladder, Orchitis, Phymosis,* &c., are considered. In each instance the usual plan of treatment is considered and valuable suggestions afforded, as derived from the Author's experience.

With regard to the use of Alkalies in the treatment of the first of the symptoms just named, the following is the result of Mr. Milton's experience.

1*st.*—The urine became alkaline in some cases, but the acidity returned even when the alkaline remedies were continued.

2*nd.*—This change was not accompanied by a relative change in the scalding.

3*rd.*—This change ensued in some cases where no antacid remedies were used.

4*th.*—The scalding was relieved without the acidity of the urine being affected.

5*th.*—When the patients were seen but once a week, these remedies were used during periods varying from two or three weeks to as many months, without in some cases relieving the scalding, which however began to disappear so soon as the condition of the urethra improved.

6*th.*—In some cases in the latter part of the acute stage, alkalies were of service when combined with other means, as injections, but of less service in the early part of this stage, in which diuretics gave more relief.

7*th.*—In the scalding which sometimes *very* suddenly attacks those recovering from gonorrhœa, they were often productive of positive harm and tended to exasperate it.

8*th.*—Again, though the urine was acid in this stage (decline) nitric acid was apparently often productive of relief. I say apparently, because this scalding will sometimes come and go in forty-eight hours ; and therefore it is extremely difficult to say what it is that carries it off.

We regret that the space at our disposal does not allow us to follow the Author through this most interesting chapter of his work. To it and the following one we attach extreme importance, and we are glad to write in terms of merited praise of the proposed line of treatment advocated.

The final chapter (concerning Gleet) is of still greater interest, and, believing as we do that the usual treatment adopted in this affection is unsatisfactory, we are glad to observe that the Author recommends a line of practice which we have long adopted. If we fail with the more usual mode of cure, we will often find that the plan here advocated is of great utility. As the Author's remarks upon the value of blisters have been somewhat misapprehended, we had better let him plead his own cause. He says (pp. 108—110.)

"As what I said on the subject of blistering has drawn forth some very erroneous remarks, I take the opportunity of placing this subject in its true light. I never thought of claiming the credit of having discovered that blisters cure gleet. I knew that blisters to the perinæum had been recommended long before I was born; nay, even in Hunter's time they were used for this purpose, and Howard confidently looks forward to great benefits from their use, but I believe that if other surgeons had ever resorted to blistering the penis, the remedy had, at the time I broached the subject, fallen into very undeserved desuetude, so much so, that I found no traces of the practice in the works I read. I certainly have met with a few injunctions not to blister the penis, which from their tenour I should have said were written by those who knew nothing of the matter; but this may be a misconstruction on my part, of course it is easy in all such cases to take up some claim to priority.

"A blister is one of the most powerful remedies that can be employed. It will cure almost any case that is not complicated with stricture. So far as my experience goes, it is when properly employed the most efficacious remedy we possess in many cases and the best calculated to remove that painful susceptible state of the urethra often remaining after gonorrhœa treated in the usual way; the tendency to catch fresh infection and the defective expulsion of urine and dribbling after making water, which lead so many patients to think they have stricture.

"I have heard it condemned as a violent remedy: I deny it, and appeal to the fact that many patients, cured by it of gonorrhœa and gleet, have on being a second time infected, blistered themselves of their own accord.

"And why should surgeons hesitate to blister in gleet? They are not so scrupulous about using such a remedy in the vicinity of the eye, the most delicate organ in the frame, why should the penis be the only part of the frame which we cannot vesicate. If patients complain of such trifling discomfort, it only shows how inconsistent and ungrateful man is. They must then really expect to be cured of these disorders without any sacrifice of trouble or convenience. If they had lived a century ago they would have been only too

glad to avail themselves of what we are now told to look upon as a 'nuisance.'

"In order that a blister may be properly applied, there are some points which, however trivial they may seem, require as much attention as the leading features of the case. When these are neglected, blistering is apt to produce such a filthy excoriated mess, that the patient will not submit to it a second time; whereas, if carefully laid on and dressed, it is, from its being out of the reach of friction in the ordinary movements of the body, even less troublesome than if on a limit or the trunk.

"Before putting it on, a little of the hair at the root of the penis is cut off, and if the foreskin be naturally retracted, it must be drawn forwards over the glans. A piece of paper is then to be fitted on the penis and cut till it exactly covers it from the root to within half an inch of the mouth of the urethra. This is then laid down on the blister which is cut out by it, wrapped round the penis and fastened with threads behind the glans and near the root.

"The patient should remain quiet when the blister is on, lest it should come into contact with the scrotum and vesicate it, which is very soon done. He should not however apply it at bedtime, as he will most likely fall asleep and not awake till the penis is one mass of vesications—a state productive of needless sufferings.

"In mild cases or where the skin is very tender, an hour and a half or two hours will often suffice, the blister is then removed, and if there are any vesicated spots, they are to be covered with pieces of linen or lint spread with zinc ointment, a layer of cotton wool is bound over these and kept in its place by means of worsted, or two small India rubber rings.

"When a more severe case renders free blistering necessary, it must be kept on three or four hours or sometimes longer, but always till the penis is blistered. To protect the part from chafing, a T bandage with a linen bag sown into the part which receives the penis, or a handkerchief tied round the waist and dropping down in front so as to keep it tight up, will be found necessary."

The last topic investigated is a form of disease, in *our* opinion by no means unfrequent and which is sometimes mistaken for another affection. The pure mucous gleet is, *we* believe, often the real disease of which the appearance gives rise to supposed *Spermatorrhœa.* It is not considered by Mr. Milton to be of frequent occurrence. He says (p. 115).

"A free discharge of mucus from the urethra unaccompanied by pus is not very common, at least I have only seen a few cases of it. But for the anxiety it causes the patient, I should say the best

treatment was to let it alone. I have tried various astringent injections; among others that of green tea, without much result.

"Occasionally the resins, such as Chian turpentine, in doses of ten grains, or the inspissated essence of spurce fir or pine in the same dose, twice a day are of some avail, particularly if the bladder be involved.

"It may be asked, how is it that gonorrhœa affects some persons so differently? Is it owing to the prevalence of a rheumatic, gouty, or scrofulous diathesis? Such an explanation has been suggested or rather invented (1) for it seems to be purely gratuitous—a sort of mystification which melts away when we put it to the test: as a rule, I never could trace anything of the kind; in one patient who had suffered from abscess in the perinæum, there were rheumatic pains; and another who was also the subject of abscess had in early life been afflicted with scrofulous ophthalmia of the eyelids. All the rest appeared quite as healthy as the average of men, and presented every variety of temperament.

"We see men of particularly delicate unhealthy appearance throw off gonorrhœa with the greatest ease, while in others, blessed to all appearances with the best of health, the first attack brings on stricture and abscess. We find that in men of a like temperament the disorder often runs a course so different that no experience will enable us to predict its duration or the results it will entail. The coarse formulæ of temperament form no guide for prognosis in diseases of the generative organs, where alone inflammation can go on for years without injury to the health or marked change of structure; and I have equally failed in tracing the peculiarity to faulty development of the generative organs, to any influence of the weather or to irregular habits; in short the only inference I can draw is that it results from an inborn infirmity in the secreting apparatus of the urethra, and that imperfect evolution of cell and fibre has more to do with it than bodily features.

"In October 1854, I read before a Medical Society of London an analysis of thirty-three cases of the most obstinate gleet treated in this way. The reader will find the paper reported in the Journals of that date, and he will likewise find that one speaker objected that the paper had been compiled in a hurry, which was true as it had only taken about five years to collect the materials, an objection which will hardly apply now.

"Rejecting all the complicated cases, there were twenty-three of those which were uncomplicated; and in twenty-one of them, a complete cure was effected, in twenty by blistering alone, though the disorder had in some of them lasted six or seven years."

Mr. Milton has furnished us, in the work under review, with a very valuable addition to medical literature upon a subject of no slight importance from its frequency and often intractability, and we attach much value to the result of his labours. He has not only furnished us with a good account of the labours of others, but rendered this the more useful by a judicious commentary based upon his own experience. We cordially recommend a perusal of his book.

In appreciation of its merits we are disposed to overlook some peculiarities which in a work of less ability might prove exceedingly detrimental to it. We allude to the very strong personal opinions expressed about the motives and actions of certain adverse commentators who have dealt him some severe blows for alledged quackery. His sufferings at their hands have proved serious grievances to our Author, who rather ostentatiously parades his punishment and pours out the vials of his wrath upon the devoted heads of his unknown reviewers.

This is only calculated to renew the contest on some future occasion; and it mars the excellence of a work replete with practical information and sound advice, the result of extended experience in this *specialité*.

On Ovarian Dropsy: its Nature, Diagnosis and Treatment, the result of thirty years' experience. By J. BAKER BROWN, F.R.C.S. (By Exam.) Senior Surgeon to the London Surgical Home for Disease of Women; &c., &c. London: J. W. DAVIES.—1862, small 8vo., pp. 283.

(First Notice.)

THE name and professional position of Mr. Baker Brown are so well known as to render it unnecessary for us to encumber our pages with the full list of appointments now, or formerly, held by our Author. The brief notice we can accord to his work must refer to some of the more salient topics in it, and not to the scenes in which Mr. Baker Brown's ripe experience has been gathered.

In the 4th Volume of this Journal, p. 402, we briefly remarked upon the interesting essay on Ovarian Dropsy, contained in our Author's admirable work on the Surgical Diseases of Women—and we are now glad to find that he has still further expanded this until it has acquired the

dignity of a separate, and most interesting, volume. The Author does not now for the first time enter upon the consideration of the nature and best mode of cure of the disease, for he has long since contributed some valuable papers upon the subject; and in the Medical Societies in London his name figures often among the rival orators who periodically criticize the operation in question with a vigor that sometimes outsteps strict professional discussion.

The Author thus grounds his claim to a public hearing, and indicates the object of the volume before us.

"In the year 1848-49, I wrote a series of four papers, in which I took a review of all the cases, successful and unsuccessful, which had occurred in my practice; and, as I think, completely refuted certain misstatements which had been made in order to depreciate the value of my cases by discrediting the facts: an attempt as weak as it was uncandid, for it happened that one or more of my professional brethren, whom I met in consultation on the cases, *were eye-witnesses of every fact which I had published.* Attempts, not less disingenuous and discreditable, were likewise made to throw doubts on the correctness of my diagnosis, which proved equally abortive."

"The next two papers (published in 1850) were "On the Diagnosis of Ovarian Dropsy;" and in November of the same year I published a paper "On the Treatment of Ovarian Dropsy by the Production of an Artificial Oviduct;" and in 1852, some papers "On the Treatment of Ovarian Dropsy by excising a Portion of the Cyst;" and in 1862, a paper at the Obstetrical Society of London, "On Ovariotomy, the mode of its Performance and the Results obtained at the London Surgical Home."

"It will be seen that in the following pages I have endeavoured to institute an impartial examination of the comparative merits of these methods of treatment, and the conditions of disease which may render each, or any of them, specially applicable. I have also added a practical account, with cases, of the operation of extirpating the whole tumour; and have endeavoured to show in what cases, and under what circumstances, this formidable operation is justifiable."

The points of information just noted are exactly such as we require for practical purposes, and we feel that the profession is indebted to any one who in good faith endeavours to render his large experience available for their use.

Mr. Baker Brown is essentially a methodical writer; and he therefore does not assume the possession, on the part of the reader, of any considerable acquaintance with the *pathology* of the disease. This forms the subject of his first chapter, in which the nature and variety, dimensions, inter-

nal arrangement, mode of growth, adhesion to surrounding structures, source of origin, and contents, &c., of encysted dropsy of the ovary are considered in detail.

Without a thorough knowledge of these points, the inexperienced operator is almost certain to be embarrassed in his attempts to remove the disease.

Chapter II, on *the Symptoms and Course of Ovarian Dropsy*, is of deep interest, and we do not apologise for reproducing in the Author's own words his admirable description of the earlier progress of the disease as indicated by local signs and confirmative symptoms. On this subject he says, (pp. 27—29.)

"I believe, therefore, we may fairly infer that, as a rule, ovarian dropsy is ushered in by the occurrence of pain; that this pain will be less in married females who have borne no children than in others, and especially if they have advanced near middle age, and the disease be slow in its progress.

"So soon as the dropsical tumour growing from the ovary acquires a moderate size, and is still confined within the limits of the pelvis, it will mostly be a source of annoyance by its pressure upon, and interference with, the position as well as with the functions of neighbouring organs. Thus, from pressure on the bladder, irregularity in the discharge of urine, and occasionally actual stoppage; from contact with the rectum, constipation by obstruction, and hæmorrhoids; or instead of mechanical, sympathetic disorders may afflict those organs, and be evidenced by sundry disturbances of function. It is fortunate if these evils be assigned to their true cause, for it is more likely they will be accounted accidental, or assigned, to some remote cause.

"By its progressive growth, the tumour rises out of the pelvic into the abdominal cavity, and in so doing stretches the Fallopian tube and broad ligament. Other symptoms now become evident, varying, however, according to the state of the patient's health, the nature of the tumour, the rapidity and directions of its growth, the occurrences of inflammatory action, distending its cells by further effusion, and attaching its walls to adjoining tissues, or the setting up of malignant disease. As I shall presently have to detail at much length the symptoms in connexion with diagnosis, it is unnecessary to describe them here as isolated phenomena.

"Respecting the state of the several functions in cases of ovarian dropsy some few remarks are called for. And first, it is to be remembered that impregnation may occur even when the disease has made great progress, always provided that both ovaries are not involved,—a circumstance, by the way, of rare occurrence. Indeed, con-

ception appears to be possible until the ovarian tumour by its size so compresses, or interferes with the uterus as to lead to the discharge of the ovum from its cavity. However, though this process be possible in a large number, it is often frustrated by concurrent conditions, and the degree of sympathetic irritation of the tumour may cause on the uterus. Hence it is that size alone is of secondary importance. 'We have (writes Kiwisch, Op. cit. p. 125) seen pregnancy occur in compound cysts about the size of an adult's head; while other women affected with tumours the size of a hen's egg were barren. In some cases the course of pregnancy was disturbed by the tension exerted on the uterus; while in other cases it went on to its normal termination, with more or less disagreeable symptoms; but, in the majority, delivery was naturally accomplished. In isolated cases only, especially small, deep-seated tumours, a more or less injurious delay in the birth. Not unfrequently, a marked increase, or even an inflammatory irritation of the ovarian cyst takes place after delivery.'

"In the first stage of encysted dropsy it is common to have irregularity of the menses,—a too frequent recurrence, an excessive flow, or dysmenorrhœa; but suppression is rare. Nevertheless, we may not be able to discover any such catamenial derangements, and menstruation may have been regular throughout the disease, or become so after its definite establishment. Likewise suppression attends development of cancerous disease, and is common when a cyst rapidly developes, or where there has been a large drain of its serous contents. Kiwisch says this arrest of menstruation by the latter causes mentioned is more frequent in compound than in simple cystic disease, and that, as a symptom, it is not without its value in the diagnosis and prognosis."

"Lastly, it is not to be forgotten that the breasts sympathize with the morbid growth of the ovary much in the same manner as they do with the enlarging uterus of pregnancy, a circumstance hereafter particularly referred to in the diagnosis between ovarian disease and pregnancy."

In pursuance of this portion of his investigation the Author notes the extreme variations that are observed, in different cases, in the course of the disease after its presence becomes clear. In this branch of the subject, as indeed throughout the whole volume, the Author shows a thorough acquaintance with the literature of the subject, and places before us a mass of information which would make his book almost an Index to the Bibliography of Ovarian Dropsy. From what is here written it will be seen that little prognostic certainty can be possible as to the termination of any case, for death may follow sooner or later, and may be accomplished either by the mechanical interference

of the tumour with the functions of the thoracic or the abdominal viscera, or death may result from inflammation set up in the tumor itself. On the other hand, spontaneous disappearance of the mass may occur, or atrophy, as in Mr. Norman's case where it occurred after an unsuccessful attempt at ovariotomy, which had been commenced but was not completed owing to the extensive adhesions found to exist.

Rupture and discharge of the contents of the sac may take place without fatal results, if the evacuated fluid be discharged through the bladder or the contiguous mucous passages, and even the peritoneum itself may receive the contents without inducing a fatal result. (p. 35.)

Chapter III. considers the varieties of Ovarian Tumours other than that discribed in the preceding chapter; and we here find noticed the *hydatid, dermoid,* and *colloid growths, cancerous disease of the ovaries,* and *dropsy of the Fallopian tubes.*

In the next chapter (IV.) the actual and differential diagnosis of the disease is considered, and in an admirable essay extending over nearly 40 pages, he contrasts the symptoms and signs of the several diseases likely to be confounded with this one. The difficulties attending this point may be estimated if we attentively peruse the opening description of the local and constitutional signs in the early stages of the disease, for their similarity to those induced by pregnancy must at once arrest our observation.

"The cyst while still in the pelvis is attended by not a few of the symptoms of early pregnancy, and frequently gives rise to the belief of its existence. I have mentioned the sympathetic enlargement, pain, and secretion of the breasts, the appearance of an areola, and the occasional occurrence of morning sickness. The patient has besides a feeling of weight and fulness in the pelvic cavity, and the menses are not unfrequently suppressed, though in the majority of cases they are only irregular. In the course of its growth the sac is apt to press on the rectum, impede the passage of fæces, and so to cause distension of the intestines above, and enlarged veins or piles about the anus. The pressure may likewise compress the neck of the bladder, and prevent the escape of urine; or, again, may cause some degree of displacement of the uterus. Such symptoms may concur, or otherwise be met with separately." (pp. 50—51.)

After the completion of the general diagnosis (actual) of the disease, the Author considers the various modes of ex-

amination best calculated to enable us to draw reliable conclusions,—and the value of *Palpation, Percussion, Exploring needles. The Uterine Sound, &c.*, is duly estimated.

The differential diagnosis is next considered, and the rules pointed out whereby we may hope to avoid any error in pronouncing whether the disease present be that under notice, or any of the following formidable list. (p. 67.)

"Retroversion and retroflection of the uterus.
Tumours of the uterus : a, solid ; b, fibro-cystic.
Ascites.
Pregnancy.
Pregnancy complicated with ovarian dropsy.
Cystic tumours of the abdomen.
Distended bladder.
Accumulation of gas in the intestines.
Accumulation of fæces in the intestines.
Enlargement of the liver, spleen, or kidney, or tumours connected with these viscera.
Recto-vaginal hernia and displacement of the ovary.
Pelvic abcess.
Retention of the menstrual fluid from imperforate hymen.
Hydrometra."

Careful observation, attention to the history of the case, and *time*, will generally clear away all difficulties in our way. But, knowing as we do the necessity so frequently arising of giving professional opinions carefully so that we may not have subsequently to retract them, we feel this part of the subject to be of considerable importance. By it, too, we may be enabled to avoid all the danger and risk likely to result from operation if attempted erroneously, *as it has been*, as in the case of pregnancy in which a trocar was plunged into a womb containing a living child!

In the 4th Chapter of the work, the Author critically examines the different modes of treatment adopted or recommended by himself and others. Under this branch of his Enquiry he considers Tapping, Tapping with pressure, Injection with Iodine, Incision of cyst with formation of fistulous opening, and lastly ovariotomy, whether complete or incomplete.

To attempt any analysis of this part of the work would necessarily extend our notice far beyond the limits at our disposal and we are unwillingly compelled to defer for the present the further consideration of Mr. Baker Brown's work.

We may however strongly recommend it to the notice of the Reader who will find in it a mass of valuable information well arranged, clearly expressed, and affording to those less familiar, than the Author, with this disease all the results of his extended experience and profound surgical skill.

The volume has an addional claim on our recommendation from the very neat manner in which it is presented to us.

Another Letter to a Young Physician. By JAMES JACKSON, M.D., Professor Emeritus of the Theory and Practice of Medicine in Harvard University, Boston: TICKNOR and FIELDS, London: TRÜBNER and Co. 1861.—Small 8vo. pp. 179.

FROM the Western World's School of Medical Science, this welcome little book is hailed with pleasure by those who recall its admirable predecessor—the volume of "Letters to a Young Physician just entering upon practice"—which justly earned such high commendation at the hands of British Reviewers a few years back. Written with the modesty of a young and untried man, yet with all the ability of an experienced and talented Physician, it had an amount of success rarely accorded to a volume treating of old and well nigh exhausted topics. Its opening pages dedicated it to Dr. Warren "his friend for 50 years," and in doing so the Author drew an interesting picture of their mutual friendship which had known no break despite the clashing of self interest, professional rivalry, and difference of temperament. There was a charm about the volume that made one regret to lay it aside, and now we welcome its successor as the work of one whom we would be glad to have known and whose previous writings prepare us to be pleased.

The volume under notice is in great part occupied by an *Essay on the Utility of Medicine*, subsequent to which are brief "Notes" on topics of more personal and local interest to Americans than to us. The history of the cases of John Lowell, (the munificent founder of the Lowell Institute), and of Prescott the Historian are, however, not destitute

of considerable interest even to those who were denied the privilege of calling them fellow countrymen. A Memorial on the sickness and death of General Washington concludes the volume.

The questions likely to come under investigation in a comprehensive Essay on the Utility of Medicine are neither few nor unimportant, and we are glad to see them argued in a generous spirit by one whose professional life began with the first year of the present century. The question chiefly debated is one the clear comprehension of which, in all its bearings, as here discussed, must be essential to every one who desires success in the profession to which the Author belongs and seems to have been mooted "in the little Commonwealth of Massachusetts" in consequence of an address, by Dr. Oliver Wendell Holmes, from which the discussion arose *whether there is any good to be derived from the practice of Medicine?*

"Dr. Holmes' did not present the question as I have stated it; but the matter has been treated as if he had done so. At least some of our brethren have regarded him as denying the utility of our art, and it was so understood by many persons not of the medical profession. It is because this question has been before the public that I have prepared the following letter. It may be admitted as some apology for offering my thoughts upon this subject, that a large proportion of the present fathers and leading practitioners of medicine in our Commonwealth were pupils in our principal Medical school while I was a professor then.

"In regard to Dr. Holmes, it has seemed to me that he was misunderstood by those who suppose that he maintained the negative upon the question above stated. His great object was to inculcate caution in the practice of medicine. He placed in a strong light the evils which may be occasioned by the action of potent drugs upon a living body. He urged us to put a reliance on nature and to pursue what has been called the expectant plan of treating the sick in all cases where the evidence in favor of some active practice are not clearly shown by experience.

"Without discussing precisely the opinions advanced by my learned friend, I have met the question which has in fact been entertained among us since the delivery of his discourse. And in regard to this question I have not taken a side for or against the utility of medicine in the style of partizan. The stand I take is somewhat that of a witness called upon in the character of an expert.

"I trust it will be found that I have given my testimony fairly with a regard to the oath that a witness is supposed to take. So

far as it goes I believe that this testimony will afford some support to the claims of medicine to be a useful art. I do not deny, but affirm that our art is imperfect. Taking the cases of disease as they are brought to us, it is not often that we are justified in employing heroic practice. But much may be done without adopting this practice. When a Surgeon is called to a man with a broken leg, he places the limb of his patient, and in some measures his whole body, in a fixed position, using splints and bandages; and then he watches him from day to day. He does not pretend that the processes of healing in the fractured bone are brought into operation by the splints and bandages, nor by his watching. But he has placed the injured parts under the circumstances most favorable for healing; and he watches that he may guard against every thing which can interfere with the salutary operations of nature, as well as that he may give to her any support which he may think that she needs. Just so, the physician, in the larger number of cases under his care, makes it his business to dispose of every thing relating to his patients in such a manner as to give the best chance for the salutary operation of the natural powers. A good nurse, it may be said, may do the same. But the qualifications of a well-educated physician must enable him to take the care with much greater advantage.

"I have not followed any strict method in this letter. After some introductory remarks I have named several of the most powerful articles of the Materia Medica which are in use among us, and some minor articles analogous to each of them respectively, and have stated in regard to each what value I attach to them. In doing this I have necessarily mentioned the diseases in which I have found them beneficial. Next, turning to the most prominent of the diseases we meet with, the acute diseases particularly, I have stated in which of these and under what circumstances I have found benefit from the employment of powerful remedies. While expressing my opinions on these topics I have allowed myself to go into details whenever I deemed this might be useful. Indeed, when stating that benefit may be expected from the use of a medicine in a particular disease, it is often quite necessary to say in what way the drug must be prepared and under what conditions it should be given.

"In writing I have had in view principally my brethren in New England and especially the Fellows of the Massachusetts Medical Society. Indeed, I have felt almost as if preparing a circular letter to these Fellows.

"To this eighteenth letter some articles are added which will, I hope, be read with interest by Medical men, and not be without some attraction for general readers in the region about Boston.

"The critic may note in this book the garrulous tendency com-

mon in old age. If he cannot, I can, I claim the apology which the aged may always offer in such a case. When a traveller returns home, he has a right to suppose that his friends and neighbours will take to hear what he can tell of foreign parts. Just so, old men and old women are justified in the belief that the young will be glad to hear anecdotes of old times and notices of the people who were contemporaries of their grand fathers. The travellers through the by gone years and in the foreign countries are both right. The care should be not to spin out their stories to too great a length."

Such are the subjects to which this volume refers. It would be impossible to better commend the perusal of it to the Reader than by directing attention to the foregoing extract from the Preface.

Those who have before perused the Author's writings will need no recommendation of ours to make them procure this one. Those to whom he is as yet unknown have now an opportunity of becoming acquainted with the latest work of one of the most experienced and accomplished professional men, and one of the most gifted writers, of the American School of Medicine. May all of us, like him, "claim an honest devotion to the pursuits of our calling, and a sincere love of Truth."

PART III.

MEDICAL MISCELLANY.

No. 9.—*A Case of Diphtheria; Exudation Membrane in Larynx, Trachea, and Bronchial tubes; Dislodgment and Expectoration of the Membrane; Subsequent great Debility; Recovery.* By W. N. CHIPPERFIELD, Acting Garrison Assistant Surgeon, Fort St. George.

P. C., aged 7 years and 2 months. A moderately robust boy, of very active habits. Has generally enjoyed good health, but had an attack of croup in 1857, since which he has been subject to harsh breathing and raucous voice on the least occurrence of catarrh. Has a great aversion to meat, either solid or as soup, and lives principally upon fresh milk with a moderate amount of biscuits and bread and butter.

1*st March*, 1863.—Appears to have a slight cold; has sneezed repeatedly and is rather feverish; voice hoarse. Bowels constipated.

℞ Infus. Sennæ Co. ℥ iss.
directly.

2*nd, Vespere.*—Draught acted freely; was restless last night, and his respiration was deep and snoring. Is still hoarse and slightly feverish. Has played about during the day, and this evening rode his pony to the Beach, but returned early saying, in a hoarse voice, that he thought it was too late for him to be out having *such a cold.* Makes no complaint; has no tenderness about the throat; pulse accelerated; skin warm.

3*rd*—Was very hot and restless during the night; breathing stridulous, both inspiration and expiration attended by a croupy sound; coughed several times; cough has a metallic ring, and is followed by rapid stridulous breathing. Says he has no pain in the throat, no sore throat at all. Swallows without difficulty. Upon examining the throat,

the left tonsil is seen to be slightly enlarged, a little purplish and glazed.

℞. Liq. Ammoniæ Acetatis ℥ ss.
Vini. Antimonii. Pot-tart. 3 i.
Potassæ Chloratis gr. xii.
Aquæ Font. ℥ iiss. M.
Ft. Mist. ℥ ss. every two hours.

Vespere.—Has been feverish during the day, but the skin is now cool and moist. Voice still raucous, respiration easier and less noisy when he is moving about. Is dressed and anxious to go out. Permitted to walk on the ramparts for half an hour, the throat being wrapped up.

To continue the mixture.

4th.—Passed a less restless night, but the respiration was more croupous in sound than it has been hitherto. Is now very hot and feverish; pulse 130, small and feeble. Voice very much altered, sometimes a mere whisper, at other times deeply hoarse. Lies quite quiet and says there is nothing the matter with him except a little fever. Takes no food; attempted to drink some milk this morning, but spasm of the constrictors came on and it returned through the nose. Throat as before.

Continue medicine.

10 A. M.—About 8 A. M., whilst I was absent on duty, his respiration became much obstructed, and his mother immediately administered an emetic of ipecacuanha wine which acted several times, and relieved him. He vomited considerable quantities of greyish viscid mucus, with a little bile. Skin now very hot, but reeking with perspiration. Pulse 140, very soft. Says "there is nothing the matter with me, only sometimes hot and sometimes wet, from the fever." Throat presents a slight livid congestion of left tonsil with some white, viscid, follicular secretion about its lower portion. Takes no food; seems very weak.

℞ Quinæ Disulphatis grs. iii.
Acidi Hydrochlorici Dil. ♏ xx.
Potassæ Chloratis grs. xii.
Aquæ Font. ℥ iii. M.
Ft. Mist. ℥ ss. every two hours.

A tea spoonful of brandy in a wine glass full of water every two hours.

Broth if he will take it.

Vespere.—Says he is much better, for the fever is gone, and he is cool and comfortable. Voice a hoarse whisper; respiration quite stridulous (such as described by Daviot, as *croupal snore);* breathing heard at some distance; is up and walking about; asked for food just now and took a few spoonfuls of rice and milk. Refuses the broth, but likes the brandy and water. Pulse improved since noon.

5th.—Restless during the night; was very feverish for a couple of hours and then perspired freely. Respiration not hurried, but both inspiration and expiration sounds still more stridulous than they were. The soft parts of the thorax recede much at each inspiration. At 6 A.M. I requested Dr. Montgomery to visit him, which he kindly did. Upon examining the throat, which is done with much difficulty owing to the retching which it produces, the lower half of left tonsil is seen to be covered with a thin layer of greyish white exudation. No tenderness of the larynx or trachea on pressure, nor of the glands at the angles of the jaw.

Dr. Montgomery recommended that the treatment should be continued, and that some counter irritation be applied to the throat if it appeared necessary.

Vespere.—Dr. Paul was in the neighbourhood and I asked him to see the child. He examined the throat which is in the same state as in the morning. The examination brought on cough and rendered him very fretful. Coughs at half hour intervals and expectorates thick viscid mucus. Pulse feeble and very quick, 144; skin cool and moist; voice a mere whisper.

To continue the treatment and to have as much support as he will take.

Brandy and water in the night, if weak.

6th.—A less restless night, but respiration very loud and crowing. Had three attacks of suffocative cough which prostrated him; expectorated some clear, frothy, but very tenacious mucus. At 7 A.M. Dr. Paul saw him. The patch of exudation on the left tonsil gone, surface purplish, but otherwise the fauces are clear and natural. Whilst examining the throat a violent cough was induced and a piece of tough membrane was forcibly expelled. It had evidently come from the larynx. It was tubular, something the size and shape of the cricoid cartilage, the deeper portion being two-thirds of an inch deep and a line in thickness; the less

deep portion was somewhat softened. Otherwise it was very tough and had the appearance of soddened wash leather. The external surface was dotted with bloody points. The whispering voice is now altered to an acute crowing sound. Respiration somewhat hurried; great recession of the soft parts of the thorax—deep hollows forming at the supra-sternal and supra-clavicular spaces at each inspiration. Pulse feeble; varies much in a few minutes, from 96 to 130.

℞ Tinct. Ferri. Sesquichlor. ʒ ss.
Potassæ Chloratis grs. xii.
Acidi Hydrochlorici Dil. ♏ xx.
Aquæ Font. ℥ ii. M.
Ft. Mist. ℥ ss. every three hours.
Broth, or beef-tea, and jelly *ad lib.*

1 P. M.—Has been tolerably comfortable since morning. Breathing as if through a valve—giving the idea that the upper border of the false membrane is detached and the edges fall together at each inspiration, the sound of which is croupy, whilst expiration is less noisy. Coughs easily and expectorates considerable quantities of opaque, dark grey, viscid mucus. Pulse 110, less unequal. Has had two or three suffocative attacks. Auscultatory sounds masked by the tracheal râle, but now and then moist bronchial rhonchi can be heard. Dr. Paul impressed upon me the great advantage which would result from opening the trachea in case evidence of impending suffocation occurred, and recommended that the necessary tubes and instruments be kept at hand.

7 P. M.—Says, he is much better; voice now a mere whisper. Pulse varying very much. Respiratory sounds less croupy; loud mucus râles in the bronchial tubes. No suffocative attacks; has expectorated, with great ease, a large quantity of frothy mucus, and other two pieces of membrane. The latter are tough but thinner than the former piece; they are white, but dotted with bloody points on the external surface. They are fibrous in character, but tear irregularly. He has taken some milk and water, and asks for brandy frequently and says it does him good. Objects to the medicine which he is, nevertheless, made to take regularly. The bowels not having acted since yesterday morning, an enema was administered which answered well. The urine is very scanty, *Sp. gr.* 1015, no albumen.

Add Sp. Ætheris Nitr. ♏ x. to each dose.

7th.—Seems much better. Is up and playing with his toys. Respiration was very harsh and croupy during the night, less so this morning. Coughs frequently and expectorates much dark, tenacious mucus. Pulse varies from 96 to 112. Ate a small piece of bread and butter and drank some tea this morning; swallows well and has no tenderness about the neck.

Noon.—Is much prostrated; not able to sit up now. Bowels moved once; stool scybalous and black from the steel. No urine since 7 P.M. yesterday. Objects to the mixture and requests to have the quinine again.

℞. Quinæ Disulphatis gr. iv.
Acidi Hydrochlorici Dil. ♏ xx.
Potassæ Chloratis gr. viii.
Sp. Ætheris Nitrici ♏ xl.
Aquæ Font. ℥ ii. M.
Ft. Mist. ℥ ss. three times a day.

To have a wine glass full of champagne every three hours, as he objects to the brandy and water, which, he says, burns his chest.

11 P.M.—Drs. Paul and Montgomery have just paid their fourth visit to-day. They found him decidedly better as regards the local symptoms, but with a very feeble pulse. Respiration easy, less noisy, expectoration very profuse; passed half a pint of urine—dark coloured and free from albumen; has taken broth and jelly several times to-day in small quantities. Likes the champagne.

8th.—Passed a comfortable night; coughed several times, but did not reject the sputa. Respiration now attended by less croupy and more moist sounds. The timbre of the voice varies; sometimes harsh whispering, sometimes very sharp and crowing. Soft parts of thorax sink deeply at each inspiration—even the intercostal spaces recede. No tracheal tenderness whatever. Pulse varies in strength and frequency, and occasionally intermits; throat quite clear; tonsils look healthy.

Vespere.—During the day has expectorated profusely. Each sputum when floated out in water is seen to be composed of more or less diffluent shreds of exudation membrane, from one third to half an inch square. One piece, more firm and dotted with bloody points, is evidently from the division of the trachea into bronchi. Has expectorated

sufficient of this membrane to cover a surface six inches square. There are coarse mucous râles audible all over the thorax, but more especially about the roots of the lungs. Drs. Paul and Montgomery have hopes that so far as the local symptoms are concerned he is safe, but he is very weak and the heart's action is very easily excited. Has taken a bottle of champagne since yesterday noon; says it is very nice and does him *so much good.* Refuses broth, but has taken some jelly and bread and butter.

9th.—A good night. This morning expectorates but little and the sputa are very tenacious and streaked with blood. Voice returning, but very raucous. Has loud mucous râles in the bronchial tubes. Is quite lively, up and playing with his brother.

Vespere.—Ate nearly a whole mutton chop to-day with relish. Asks for champagne more frequently than it is allowed; seems much better but still there is irregularity of his pulse. Passes but little urine; bowels open.

To omit the Chlorate of Potash.

10th.—Slept the greater part of the night without coughing. Awoke at 3 A. M. and asked for champagne saying he was very weak; the pulse was intermitting every twelfth beat, but became steady in about half an hour. Is very irritable and cross this morning. Has drank some milk and water, but will not eat anything. Pulse very soft, 90 to 120. Large crepitation in the bronchi. Voice sometimes inaudible, at other times raucous. Expectorating a little frothy mucus without blood.

℞ Ferri. Ammonio Citratis grs. xii.
Ætheris Sulph. ♏ xii.
Aquæ Font. ℥ ii. M.
Ft. Mist. ℥ ss. every fourth hour.

Vespere.—Still very feeble and cross; wants to go out. Has walked about the verandah and tired himself. No cough or expectoration. Has taken a minced snipe and a little jelly for dinner. Begs for *more champagne;* takes a pint daily. Passes but little urine.

Add Sp. Æther. Nit. ℥ ss. to mixture.

11th.—Improved. Pulse small, soft, and varying in force and frequency. On waking it intermits, but not regularly. Passed a large quantity of urine in the night. Has eaten rather heartily of toast this morning, but refuses milk, as

any fluid which is at all viscid returns down the nose. Swallows solids well. Has no cough; voice more natural than it has been hitherto; is running about, and seems inclined to over-exert himself. Asks for his medicine frequently, probably because he knows he always has champagne after it. Says "it does me good, and I want to get well."

To have an airing in the carriage this evening.

14*th.*—So much improved that he was able to go out this morning.

Omit medicine.

22*nd.*—Now shows that his illness has pulled him down. Says, "Before I had very few bones and they were very small, now I have plenty and large ones too." The heart's action is very weak. He fainted this afternoon after running about for a few minutes. Voice not yet natural.

Still requires the champagne.

28*th.*—Had a little mucous diarrhœa yesterday and it now continues. The matters discharged have exactly the appearance of the broken down membrane he expectorated. His mother thinks he is passing the sputa which he swallowed. He daily has one or two natural stools. Leaves for Palaveram Hill this evening,

31*st.*—The diarrhœa has quite ceased. He has passed a natural stool daily since the 28th, and, besides this, five or six times he discharged about two table spoonfuls of greyish, opaque mucus with fibrous shreds in it, no blood.

7*th April.*—Has had three attacks of faintness, with extreme pallor and profuse perspiration, after walking a few yards down and up the hill, but he is getting stouter and evidently improving rapidly. Appetite very capricious, but now and then eats some meat. Takes his milk well.

11*th.*—Returned to Madras, looking rosy and in good health. His voice has not as yet become quite natural.

Remarks.—The subject of the foregoing case is my eldest son. I have thought it right to place the case on record as an instance of recovery from an affection of a serious and alarming nature, both as regards the immediate local symptoms and the more remote constitutional effects. Before the occurrence of this case some few cases of diphtheria

had been observed in Madras. One of these came under my own care; the case was treated at its very commencement, and the disease was confined to the back of the fauces where a small patch of exudation existed. Recovery took place under a similar treatment to that above detailed together with the topical application of slightly diluted hydrochloric acid. Besides this I know of one fatal case where the larynx, trachea, and bronchial tubes to the third or fourth divisions were lined with a tough exudation membrane; and I have heard of another fatal case.

The necessity of a supporting method of treatment in diphtheritic affections is so universally admitted that there can be no necessity to make any allusion to this subject here.

Any one who has read Dr. Jenner's or Dr. Greenhow's graphic descriptions of diphtheria could not fail to recognize how completely consonant the above case was with the ordinary course which the disease has been observed to take in the epidemics which have occurred in England since 1857. Consonant except as regards the termination, for Dr. Jenner's experience confirms that of M. Bretonneau who, writing of diphtheria as observed in France in 1824, says, that out of twenty-seven cases in which the larynx and trachea were affected, the recoveries were but three. Of course the knowledge of this fact very much increased the anxiety which was felt with regard to this case.

The nervous symptoms which are so apt to occur soon after the decline of the more alarming local affection, were very well marked. The return of fluids through the nose, and the irregularity and feebleness of the heart's action, were the most prominent of these.

With reference to the discharges from the bowels which occurred just before convalescence was fully established, I am unable to say much. The matters evacuated were not like the mucus of ordinary dysenteric diarrhœa, but, as remarked by the child's mother, they exactly resembled the broken down membrane which he expectorated in such quantities. It is certain that he must have swallowed some of this, because, though he coughed much at night, he did not attempt to expectorate, but immediately made an effort at deglutition. A false membrane can scarcely be a digestible substance, but it seems improbable that such matters would be retained in the intestines for a fortnight.

It may be that the mucous surface of the large bowel was affected in a minor degree with the diphtheritic inflammation, and that the discharges alluded to were directly derived as an exudation from that membrane. It is certain that they occurred during the time the child was being anxiously watched as not having completely recovered from the disease, and that they were unattended with any constitutional symptoms, such as pain or fever, which would have been observed had they been the result of subacute dysentery.

I may just mention that a case of simple tonsillitis occurred in my family just before the commencement of the above detailed attack, and that subsequently one mild and one very severe case of sore-throat happened to members of my household. And further, it should be mentioned, that about the time of the first symptoms of illness in my son, the infant child of an opposite neighbour was seized with choleraic diarrhœa, which terminated fatally, from effusion on the brain, on the night of the 3rd of March; and the father of this child, who had been suffering for some days from diarrhœa, fell a victim to cholera on the afternoon of the 5th of March.

No. 10.—*Description of a New Microscope suited for Medical Purposes, and of moderate price.* By Captain J. Mitchell, Superintendent Govt. Central Museum.

English Opticians have often been asked why they cannot produce a Microscope suited to the wants of those who do not desire to spend a large sum upon an instrument, and who are thus compelled to buy a cheap French or German one, or, at the best, an indifferently made English stand furnished with foreign lenses.

Those well known makers, Messrs. Smith, Beck and Beck, of No. 6, Coleman Street, City, have replied to this question in the most satisfactory way during the past year by producing what they have named The Universal Microscope—which, with a one inch objective of 25° and a quarter inch of 75° angular aperture, two eye pieces, magnifying 60, 90, 240, and 360* diameters, and an upright mahogany

* These figures are given by the makers, I have not the means of testing their accuracy.

cabinet they sell for £5, or with pliers, stage forceps and glass plate £5 5*s*. The eye pieces are those known as Kellner's, and though small they give a large field, viz., from 6½ to 8 inches,* and the objectives are of the usual construction, the one inch having two, and the quarter three combinations of varied size and curve, and not like those of foreign makers all of the same size and curve—an arrangement which cannot ensure fine correction.

The stand is entirely of brass; the base, a flattish ring 5½ inches in diameter, has on the† left a stout pillar 5¾ inches high, from an axis passing through the top of this is suspended an arm which carries the body and stage. The body is screwed to a strong dove-tailed plate, which is elevated or lowered by a chain ‡ to which motion is given by a spindle passing through the axis and attached to a large milled head on the left of the pillar. The motion is very steady, entirely free from shake, and sufficiently sensitive to render a fine adjustment unnecessary. The makers however have applied a lever which hangs suspended between the milled head and the pillar, and by pressing lightly against this the motion of the pinion can be graduated or entirely stopped. I have not found this aid at all necessary in focusing the quarter.

The stage, which is sufficiently large and firm for ordinary use, has a large tubular aperture in the centre for the reception of the usual illuminating apparatus, and the polarizing prism:—it is furnished with a plate having a ledge to support a glass slide or other object holder when the body is inclined: at one end of this bar or ledge is a short spring to secure the slide, &c., and at the other a small pin which supports the stage forceps. There is a quadrangular aperture in this plate through which passes a screw that secures a double spring, branching right and left and bearing on the plate. By grasping, with the thumb and two first fingers of the right hand, the extremity of the plate, which is folded underneath for that purpose, an object is moved about with great facility. By loosening the screw the upper plate may be removed when it is required to examine a dissection in a watch glass or small saucer. A small condensing lens with double ball and

* Measured at 8 inches, which is about the distance of the eye glass from the stage.

† The reader is supposed to have the instrument before him set up for use.

socket motion is attached to the front of the stage, and a piece of tubing screwed into the stage beneath carries the diaphragm plate and the mirror, the latter being attached by a rotatory semicircle to another piece of tube sliding over the first, and thus all the usual motions are obtained.

The form of the stand is quite unique, but it is exceedingly steady and well balanced, and the body can be secured at any angle by a small screw at the top of the pillar.

I believe this is by far the best instrument at the price that has yet been made. The aberations are well corrected, and the performance of both powers is very satisfactory. If I have a prejudice it is in favour of Ross's workmanship, and having therefore no bias towards Messrs. Smith, Beck & Beck, I say with the greater confidence that this instrument does them great credit. I have examined it with great care, and I find that the quarter is effective upon Pleurosigma formosum; the scales of Morpho menelaus and Podura. It will also shew the striation on Pleurosigma quadratum, but requires the 3rd eye piece to bring out the markings boldly. It shows very well such urinary salts as carbonate and oxalate of lime, also spermatozca and the blood and mucous corpuscles, but for the three latter as well as the smaller crystals of oxalate of lime, which are found so small as 1—18·000th of an inch on the side, more power is desirable. The one eight of 85° aperture, which the same makers supply for this instrument, would probably furnish all the power required by the professional man in a hack instrument.

With the one inch I have examined the larger urinary crystals, such as uric acid, and the triple phosphate, also such injected preparations as the human choroid, section of human toe, ditto of muscle and of kidney, the small intestine, and the gill of an eel, all of which were very well shown. This last object, and the proboscis of a Fly, Dr. Carpenter says, are excellent tests of the qualities of a one inch objective.

I have also examined many other objects, but the foregoing are such as shew how far the instrument is suited to supply the wants of the professional man, or to aid the Medical student in the study of minute anatomy; if it is not going beyond my province I would say it would make a good college prize for a successful pupil, as such an one would be likely to make good use of it.

The makers supply several additions to the foregoing, as, extra object glasses, viz., 2 inch, ½ inch, and ⅛ inch, at £1 10*s.*, £2 10*s.*, and £4. Lieberkuhns for 1 inch and ½ inch at 8 shillings each. I prefer this mode of illumination to that furnished by a condensing lens, which I very seldom use. The additional apparatus consists of a third eye piece at 10 shillings and 6 pence, Wenham's Parabolic reflector, flat mirror, polarizing apparatus, camera lucida, glass micrometer, $\frac{1}{100}$ths and $\frac{1}{1000}$ths of an inch, small live box, small glass trough, and a small box to contain the above, the price of which if taken at once is £5.

A stage with mechanical movements costs £2 10*s.*

There is also a combined body with revolving discs capable of receiving at the same time, three object glasses and three eye pieces, either of which can be brought into use in a moment, much time is thus saved where a number of objects have to be examined, or where any object requires to be examined with different powers.

A Binocular body with revolving disc for three object glasses, and two extra eye pieces can be had for £5 5*s.*

NOTE.—I have got out one of these £5 Microscopes as a hack for the Museum, when not in use it will be found in the Model room under a glass shade. A tolerable Microscope is not procurable in Madras, and I have thought it desirable to let the public see what can be bought for the very moderate sum of £5.

No. 11.—*Remarks on the Treatment of Cholera by Turpentine.* By Surgeon Major J. W. MUDGE, M.D., Surgeon, 2nd District, Madras.

To those of our profession whose destiny has placed them in the East, and indeed to all who in other parts of the world have witnessed the extensive prevalence of epidemic Cholera, the unsatisfactory results of Medical treatment must have been painfully evident; nearly half of those attacked falling victims to the disease, whatever may be the plan of treatment adopted,—so many remedies have been tried and found wanting that at length the hope of aid from rational medicine has well nigh deserted us, and the most irrational empiricism has as fair a chance of being employed as any more reasonable method. In my own case, for more

than twenty-two years I have seen cholera prevailing under every variety of circumstances, in the camp, in the garrison, in the jail, in the crowded city; among men, women and children, of all ages and in all conditions of life. I have witnessed all sorts of treatment, from Annesley's heroic doses of calomel and blood-letting, the cold douche, the steam bath, galvanism, the whole farrago of sugar of lead, sulphur, soda, magnesia, tartar emetic, brandy, spices, chloroform, chlorodyne, liquor acid Halleri, and an olio of other things from homæopathic doses of camphor down to Honigberger's strange theory of Quassia inoculation; the mortality, however, maintained, for the most part, a terribly steady ratio. About 51 per cent. recovered, and 49 per cent. died.

In August 1861 a number of severe and fatal cases having followed each other rapidly in the course of my practice, I determined to place no further reliance on any of the remedies I had hitherto used.

The primary feature of Asiatic Cholera being serous discharge from the bowels or serous hæmorrhage, there appears nothing overstrained or unscientific in the idea that such remedies as have been found beneficial in other passive hæmorrhages, might also produce their specific effects in this. Sugar of lead has no doubt been prescribed with this intention, and, in the form of "Paterson's pills," has acquired a certain degree of reputation, but it is questionable if so powerful a sedative as acetate of lead can be generally suitable to the treatment of a malady whose prominent feature is rapid and excessive depression.

Thinking over other remedies which are known to be valuable in checking internal hæmorrhage, Turpentine presented itself to me as the most likely to fulfil most of the conditions required. Its effects, in hæmatemesis, hæmaturia, and certain forms of hæmorrhage from the bowels, are undoubted. It is moreover carminative, stimulant and diuretic—it is rapidly taken up, and though apparently producing a constringent effect on the exhalents of the mucous surfaces, has no tendency to produce constipation. Being satisfied with the consideration of all these points, I resolved to give turpentine a fair trial. With a view to combining a certain amount of nutriment with it and to present it to the stomach in connection with an animal substance, (a point on which the

efficacy of the minute quantity of Iodine in cod liver oil is supposed particularly to depend) I directed it to be beaten up with yolk of egg; a small quantity of camphor as an anodyne was added to each dose with a little Tincture of Lavender and cinnamon water as the menstruum.

The exact prescription is as follows—

℞. Ol. Terebinthinæ ℥ ss.
Vitell Ovi No. ii.
Camphoræ gr. viii.
Tinct. Lavandulæ ʒ ii.
Aquæ Cinnamomi ℥ iiiss.
M.

F. Mistura.

One fourth part for a dose every hour, if retained, or oftener if rejected.

For children the dose is graduated according to age.

Vomiting is rarely produced. Large draughts of fluid are avoided.

The above treatment has been carried out steadily in the Vepery Hospital since September 1861. A register of the cases has been kept and the results are shown below. Four doses have generally been found sufficient to check the serous stools—the bowels however still continue to act in most cases, the dejections becoming scanty, sometimes gelatinous, but gradually assuming a fœculent character. The urinary secretion is often restored after a few hours. In a good many cases there has been a tendency to coma—to relieve this blisters have been applied to the nape or head, and the free use of Chlorate of Potassæ, in five or ten grain doses every hour or oftener, has been found successful. This coma appears due to exhaustion and to the abnormal condition of the blood, deprived, to a large extent, of its saline constituents. The heart, weakened by nervous depression, loses much of its propelling power, and venous congestion is the consequence.

Purgatives which are ordinarily exhibited in such cases rarely effect any good, and indeed seldom act at all. The common inference is that the patient is lost because the bowels could not be got to act. It appears to me that this

is altogether an erroneous theory, and that watery stools, if induced, would only make matters worse. Chlorate of Potassa, from its oxygenizing, stimulant and diuretic properties, has been found the best remedy.

It is not my intention, at present, to indulge in any more theoretical remarks; I have felt it a duty to make known a mode of treating this fatal disease which, so far as my observation extends, has been attended with more favorable results than any other, for a continuance. It has now been in use for eighteen months in the Vepery Hospital and no case of cholera, which afforded the slightest hope of recovery, has been treated in any other way. It will be seen by the register that the cases were generally severe, of that low and depressed type which is so marked in the poor and neglected; it will moreover be seen that most of them had been many hours ill before admission.

I believe I may state, positively, that not a particle of calomel or opium, or sugar of lead has been given to any one of these patients while ill of cholera—great care however is taken to supply nutriment as soon as advisable. Brandy or arrack are freely used, when indicated, and such other measures employed as experience and common sense may dictate the maxim steadily inculcated being "ne quid nimis."

In bringing this mode of treating cholera to the notice of the profession, I am not unmindful of the numerous vaunted remedies which have been from time to time proclaimed, only to be consigned, sooner or later, to the pit of oblivion, along with other things weighed in the balance and found wanting. I therefore make no boast of an ascertained remedy. I submit the facts for what they are worth, and would only add in conclusion, that as we have hitherto found no one remedy better or more reliable than another in reducing the average mortality of epidemic cholera, we are perfectly justified in giving that now under notice a fair and impartial trial, and the only way this can be done is by using it, to the exclusion of all other pills, powders, or potions of a medicinal nature. For instance, to give a calomel and opium pill as a preliminary or an adjuvant, is to nullify the experiment. If turpentine is to gain any credit, it must be tested *alone* and in *all* cases of true cholera, which are not clearly beyond hope.

Epitome of Cholera Cases treated by Turpentine in the Vepery Hospital, from September 27th 1861, to March 17th 1863.

Months.	Treated.	Recovered.	Died.
September 1861	1	1	0
October ,,	2	2	0
December ,,	3	1	2
January 1862	3	3	0
February ,,	2	0	2
March ,,	1	0	1
April ,,	4	3	1
May ,,	4	4	0
June ,,	1	1	0
July ,,	3	3	0
August ,,	2	1	1
October ,,	2	1	1
November ,,	6	3	3*
December ,,	6	5	1
January 1863	8	4	4
February ,,	18	8	10†
March ,,	3	2	1
Total	69	42	27

The following will shew the general results of the treatment in the hands of myself and Dr. Montgomery my successor in the District, who has kindly continued to carry out the same treatment in all suitable cases, and I am indebted to him for this continuation of the Register up to the date of commencing this Report. I am authorised by him to add that he *agrees with me as to the rationale of treatment*, and, that he continues its use from a sincere conviction of its *superiority to any other method*, which has been sufficiently tried to justify any conclusions regarding it.

I cannot conclude this paper without recording the very valuable aid I received from Mr. 2nd Apothecary Robert Stephenson, lately attached to the Vepery Dispensary. His judicious care and attention to these poor struggling cholera patients was most praiseworthy and undoubtedly contributed a most important share of the unusually favorable results.

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* One recovered, but died 6 days afterwards (relapse).

† One of these Æt. 64, recovered, but died 4 days after (exhaustion); another recovered, but died 4 days after from lung congestion.

Register of all Cholera Cases, admitted into the Vepery Hospital from 27th September, 1861.

Number of Admission.	Date of Admission.	Names.	Age.	Sex.	To illustrate the Turpentine treatment.			After treatment.	When passed Urine.		Remarks.
					State on Admission.	Hours ill before Admission.	Doses of Turpentine Mixture.				
	1861										
1	27 Sept.	Chinnamah	24	F.	Not registered		4 Doses.	Not Registered		R.	Recovered.
2	15 Oct.	Moonean	32	M.	do.	14 hours.	4 do	do		R.	do
3	23 do.	Toolcanum	47	M.	do.		4 do	do		R.	do
4	26 do.	Chinnamah	30	F.	Complete collapse.	8 hours.	None.	do		—	Died in 5 hours.
5	27 do.	Comarappen	55	M.	In a dying state	38 do	do	do		—	Died.
6	28 Nov.	Murryamah	20	F.	do.	12 do	do	do		—	Died shortly after admission.
7	7 Dec.	Veerasawmy	40	M.		50 do	4 Doses.	Ammonia Blister to chest	Passed urine.	D.	Died—a thin weakly man,
8	19 do.	Iothee	50	M.	Collapse	7 do	4 do	Brandy & support.		D.	Died. [did not rally.
9	26 do.	Mootoosawmy	58	M.		16 do	3 do	Stimulants		R.	Recovered.
	1862.										
1	6 Jan.	Mootamah	60	F.	Severe case		4 Doses.		The same evening.	R.	Recovered.
2	14 do.	Name not known	30	M.	Dying		None.	Stimulants		—	Died. [admission.
3	23 do.	Sooboo	45	M.	do		do	do		—	Died immediately after
4	26 do.	Rungamah	54	F.		7 hours.	4 Doses.	do	7 hours.	R.	Recovered.
5	27 do.	Hoossain Bee	2½	F. C.		2 do	2 do ½ quantity.			R.	do [sion.
6	1 Feby.	Innassee	30	F.	Collapsed jactitation	47 do	None.	Stimulants		—	Died shortly after admis-
7	18 do.	Ponnen	60	M.	do.		4 Doses.		Passed urine.	D.	Died exhausted.
8	24 do.	Charles Schooner	17	M.			4 do			D.	do
9	9 Mar.	Moondacunnee	11	F. C.	Collapsed and in extremis	24 hours.	None.	Stimulants		—	Died 5 hours after.
10	9 do.	Iahsawmy	36	M.	do.	28 do	4 Doses.	do		D.	Died.

Register of all Cholera Cases, admitted into the Vepery Hospital, &c.—(Continued.)

Number of Admission.	Date of Admission.	Names.	Age.	Sex.	To illustrate the Turpentine treatment. State on Admission.	Hours ill before Admission.	Doses of Turpentine Mixture.	After treatment.	When passed Urine.		Remarks.
	1862										
11	15 April.	Doorgiah.....	34	F.	.....	8 hours.	4 Doses.	.....	28 hours.	R.	Recovered. Zinc on admission.
12	15 do.	Paupah	35	F.	.....	13 do	None.	Stimulants.....	.....	—	Died.
13	15 do.	Soondrum...	28	F.	Verylow,pulseless.	10 do	4 Doses.	.....	6 hours	R.	Recovered.
14	15 do.	Vulleeamah	9	F. C.	.....	7 do	3 do ½ oz.	.....	.....	R.	do
15	15 do.	Harris Franck.....	9	M.C.	Insensible, pulseless.....	8 do	None.	Stimulants.....	....	—	Died within 1½ hour.
16	17 April.	Moonechee.....	60	F.	Collapsed & pulseless...	16 hours.	3 Doses.	.....	.....	D.	Died.
17	17 do.	Venketsawmy.....	34	M.	. .....	8 do.	None.	.....	.....	R.	Cholera symptom subsided, eruption of variola appeared and died delirious.
18	2 May.	Canagoo.....	26	F.	Severe case	.....	4 Doses.	.....	11 hours	R.	Recovered.
19	5 do.	Mooneamah.	34	F.	Very low, could scarcely swallow.	.....	None.	.....	.....	—	Died in 2 hours.
20	6 do.	Ragavooloo Rajah.	50	M.	.....	.....	4 Doses.	.....	10 hours	R.	Recovered.
21	15 do.	Maduray.....	7	M.C.	.....	.....	3 do ½	.....	15 do	R.	do
22	22 do.	Mungamah.....	65	F.	Collapsed & pulseless.....	11 hours.	None.	Stimulants.....	.....	—	Died.
23	25 do.	Sagauramah..	25	F.	... .	14 do	4 Doses.	.....	.....	R.	Recovered.
24	11 June.	Aulay.....	20	F.	A severe case.....	6 do	4 do	Pot. Chloras Spts. Ammonia & Spts. Æther Mixture, Blister to nape of neck.....	.....	R.	[to coma; recovered. Urine turbid and tendency

25	4 July.	Mungay.....	26	F.	Cold, with small pulse...	25	do	4	do		.....	13 hours	R.	Recovered.
26	6 do.	Ramasawmy.....	7	M.C.	In a very low state.	15	do	4	do	½	.....	11 do	R.	do
27	6 do.	Veeramah.....	6	F. C.	Extremely low. ...	8	do	3	do	½	Mist. Pot. Chloras, Blister to nape of neck.....	40 do	R.	do
28	5 Aug.	Moocundoo...	5	F. C.	Collapsed, cold and pulseless...	8	do		.....		Stimulants	.....	—	Become insensible immediately after admission, died.
29	8 do.	Aurokeam.....	12	M.	Cold and pulseless.	7½	do	4	Doses.	½	Mist. Pot. Chloras.	9 hours	D.	Recovered from Cholera, but died on the 7th day from debility and exhaustion.
30	15 do.	Chouryappen.....	11	M.	do.	10	do	6	do	½	Stimulants	10 do	R.	Made a good recovery.
31	1 Octr.	Soombrum Shah...	62	M.	Collapsed.....	12	do	4	do		do	.....	D.	Died after 26 hours.
32	25 do.	Ummoyee..	11	F.	Collapsed, cold and pulseless...	2½	do	4	do	½	do	30 hours	R.	Recovered.
33	25 do.	Venkiah.....	30	M.	Brought in a moribund state...	10	do		.....		do	.. ...	—	Died in half hour.
34	7 Novr.	Chinnien.....	38	M.	Collapsed.....	12	do	4	Doses.		Mist. Pot. Chloras.	26 hours	R.	Recovered.
35	21 do.	Sawyamah...	50	F.	do.	14	do	4	do		Stimulants	.....	D.	Died in 15 hours.
36	22 do.	Vulleeamah..... ...	28	F.	do.	36	do		None.		do	.....	—	Died in 12 hours.
37	22 do.	Eliza Francis.....	7	F. C.	In a very low state.	10	do	4	Doses.	½	do	24 hours	R.	Recovered.
38	24 do.	Mooneechee.	54	F.	Brought moribund.....	24	do	4	do		do	.....	D.	Died.
39	24 do.	Doorgee...	32	F.	Very low, cold and pulseless...	18	do	4	do		do	24 hours	R.	Recovered.
40	25 do.	Yellamah...	62	F.	Collapsed.....	20	do	8	do		do	24 do	D.	Died by relapse after 6 [days
41	28 do.	Mungay....	65	F.	Admitted moribund	20	do		None.		do	.....	—	Died.
42	30 Novr.	Mungay	23	F.	Collapsed & pulseless	18	do	4	Doses.		do	16 hours	R.	Recovered.
43	1 Decr.	W. Bradie.....	49	M.	Admitted moribund....	36	do		None.		do	.....	—	Died in 6 hours.
44	4 do	Chinnamah	29	F.	Very low, cold and pulseless...	18	do	6	Doses.		do	16 hours	R.	Recovered.

Register of all Cholera Cases, admitted into the Vepery Hospital, &c.—(Continued.)

Number of Admission.	Date of Admission.	Names.	Age.	Sex.	To illustrate the Turpentine treatment. State on Admission.	Hours ill before Admission.	Doses of Turpentine Mixture.	After treatment.	When passed Urine.		Remarks.
	1862.										
45	5 Dec.	Paupah.....	16	F.	Very low, cold and pulseless..... ...	16 hours.	4 Doses.	Stimulants.....	10 hours.	R.	Recovered.
46	6 do	Ponnee.....	1½	F. C.	Admitted moribund...	24 do	None.	do	.....	—	Died in 3 hours.
47	18 do	Pursooramdoo.....	45	M.	Collapsed & pulseless.....	24 do	do	do	.....	—	Died in 6 hours.
48	20 do	Massilamany.	8	M.C.	Cold, clammy and pulseless...	8 do	4 Doses. ½	do	8 hours	R.	Recovered.
49	22 do	Eliz. Church	4½	F. C.	Cold thready pulse.	14 do	4 do ½	do	12 do	R.	do
50	24 do	Vathum...	23	F.	Collapsed & pulseless.....	10 do	4 do	do	.....	D.	Died in 38 hours.
51	30 do	Cunneeapah.....	36	M.	do	15 do	4 do	do	16 hours	R.	Recovered.
	1863.										
1	2 Jany.	Pooren..... .	50	M.	Very low, pulseless.	12 do	4 do	do	.....	D.	Never rallied; died after 6 hours from exhaustion.
2	18 do	Cholay..	68	F.	Collapsed do	14 do	4 do	do	.....	D.	Died in 14 hours from exhaustion.
3	22 do	Camachee....	65	F.	do do	24 do	4 do	do	.....	D.	Died in 22 hours from exhaustion.
4	23 do	Meenachee...	35	F.	do do	16 do	4 do	do	.....	D.	Improved; pulse recovered, but died from congestion of lungs in 30 hours.
5	27 do	Anthonyamah.....	4	F. C.	do do	14 do	None.	do	.....	—	Treated for ten hours; removed by her friends.

6	28	do	Cawley.....	9	M.C.	do	do	14	do		do	do	....	—	Never rallied; died in 40 hours from exhaustion.
7	28	do	Murryamah.....	33	F.	do	do	20	do	4	Doses.	do	14 hours	R.	Recovered.
8	29	do	Moonesawmy... ...	7	M.C.	do	do	12	do	4	do ½	do	10 do	R.	do
9	29	do	George Fraser.....	14	M.	do	do	16	do	4	do	do	16 do	R.	do
10	31	do	Ramasawmy.... ...	26	M.	do	do	18	do	4	do	do	14 do	R.	do
11	1	Feby.	Poonee.....	24	F.	do	do	16	do	4	do	Blister over nape of neck.....	20 do	R.	do
12	1	do	Sebastian.....	7	M.C.	do	do	24	do	4	do ½	Stimulants, blister over chest.....	.....	D.	[congestion of lungs. Died in 10 hours from
13	2	do	Moothealloo....	64	M.	do	do	20	do	4	do	Stimulants, &c	18 hours	D.	Improved; pulse recovered; died in 4 days from diarrhœa & exhaustion.
14	8	Feby.	Poongavanum.....	18	F.	do	do	14	do	4	do	Stimulants.....	14 do	R.	Recovered.
15	9	do	Mooneean	9	M.C.	do	do	16	do	4	do ½	Leeches 3 reg. lumb.	.....	D.	Passed no urine; never rallied; died in 24 hours from exhaustion,
16	11	do	Poonnoosawmy....	2	M.C.	do	do	20	do		None.	Stimulants.....	.....	—	Passed no urine; never rallied; died in 4 days from exhaustion.
17	12	do	Surloo.....	30	F.	do	do	18	do	4	Doses.	Blister over stermum.....	.....	D.	Passed no urine; never rallied; died in 10 hours from exhaustion, and congestion of lungs.
18	13	do	Theeroomaul.	14	M.	Very low	do	10	do	4	do	do	13 hours	R.	Recovered.
19	13	do	Poonen.....	16	M.	Collapsed	do	16	do	4	do	do	14 do	R.	do
20	14	do	Iylandum	62	F.	do	do	20	do	4	do	Blister over chest.	12 do	D.	Rallied; passed urine and showed every symptom of recovery, but died from congestion of lungs.
21	15	do	Thurmen.....	36	M.	do	do	24	do	4	do	do	.....	D.	Passed no urine; never rallied; died in 10 hours from exhaustion.
22	16	do	Pursoramen..	34	M.	do	do	14	do	4	do	do	18 hours	R.	Recovered.

Register of all Cholera Cases, admitted into the Vepery Hospital, &c.—(Continued.)

Number of Admission.	Date of Admission.	Names.	Age.	Sex.	To illustrate the Turpentine treatment.			After treatment.	When passed Urine.		Remarks.
					State on Admission.	Hours ill before Admission.	Doses of Turpentine Mixture.				
	1863.										
23	17 Feb.	Peroomaul...	34	M.	Collapsed pulseless.	18 hours.	4 Doses.	Blister over chest	.....	D.	Passed no urine; never rallied; died in 5 hours from exhaustion.
24	18 do	Padavatah...	66	F.	do do	16 do	5 do	do	.....	D.	Passed no urine; never rallied; died in 22 hours from exhaustion and old age.
25	18 do	Suntheeamah... ...	11	F.	do do	14 do	6 do ½	do	16 hours	R.	Recovered.
26	18 do	Mungay.....	26	F.	do do	20 do	4 do	do	15 do	D.	Passed urine; pulse returned; died in 4 days from congestion of lung.
27	20 do	N. McCarthy	8	M.C.	Very low pulse, small.	.....	5 do ½	do	11 do	R.	[recovered. Was taken ill in Hospital;
28	21 do	Voothoocatah.....	64	F.	Collapsed, pulseless	18 hours.	6 do	do	14 do	R.	Recovered.
29	25 do	Megail.....	53	M.	do do	24 do	6 do	do	.....	D.	Slightly rallied; passed no urine; died in 3 days from congestion of lungs and exhaustion.
30	3 Mar.	Rungamah...	21	F.	Very low do	13 do	6 do	do	14 hours	R.	Recovered.
31	14 do	Chourynoyagum...	52	F.	Collapsed do	22 do	5 do	.....	30 do	R.	Passed no urine since 14 hours before admission; recovered.
32	17 do	Sunnassee	48	M.	do do	20 do	6 do	.....	.....	D.	Died.

No. 12.—*Dislocation of the Right Knee Joint.* By John Shortt, M.D., Zillah Surgeon, Chingleput.

Sinnapen, Æt. 26, Caste, Malabar; Trade, weaver.

Admitted 27th April 1862. The patient was brought into the Civil Dispensary at 3 p. m., last evening, from an adjoining village with the right leg enormously swollen and slightly disfigured.

The patient is a strong robust young man, who gives the following account of himself.

States that on the night of the 25th instant, at about 7 p. m., whilst walking in the dark he tripped and fell on the ground, and immediately found that he could not get up as he had completely lost the use of his right leg and that it gave him much pain. He was then conveyed to his house by his friends where various remedies were applied, but they gave him no relief.

His friends, finding that they could do nothing further to relieve his sufferings, at his request brought him to the Dispensary.

The Dresser, an experienced and intelligent man, could make nothing of the case owing to the great swelling that was present, and as I was away from the place that evening, the only thing to be done was to make the patient as comfortable as circumstances would admit for the night.

I saw him early next morning, the swelling of the limb was very great, but on a careful examination I was able to diagnose it as a case of dislocation of the knee joint forwards. The condyles of the Femur were thrown back into the popliteal space distending the skin of that part to its utmost extent. The head of the tibia, and the patella, were elevated in front; the limb was shortened to the extent of an inch, slightly flexed and felt cold to the touch.

The dislocation of the bones of the joint was complete, and the limb altogether had a very unsightly appearance.

The skin of the ham and calf was slightly abraided; pulse excited, 104; tongue dry; skin warm; bowels confined.

Having satisfied myself as to the nature of the accident, I accomplished reduction by slightly raising the thigh and extending the leg out to its full extent with some force and slightly flexing it on the thigh: the bones readily glided into

position, and the dislocation was thus without much difficulty reduced.

The limb was then wrapt round loosely with a roller bandage, and placed comfortably on a "Mackyntire splint," well padded, and cold was applied to the part.

The patient had an aperient draught given him.

1*st May.*—The patient has been doing well; he has occasionally complained of pain in the knee joint; functions natural.

Cont.

The patient continued to progress satisfactorily without a single untoward symptom, and on the 26th of May 1862 he was discharged cured.

As a precautionary measure and to give support to the knee joint a leather case well softened with oil, was fitted on to it and the patient recommended to wear this for some time.

Remarks.—I believe complete dislocation of the knee joint is of very rare occurrence, for when we consider how powerfully this joint is protected, it surprises us to think that an accident of the kind can at all occur.

That it does occur the present case sufficiently illustrates. According to Professor Fergusson (Vide Fergusson's Practical Surgery, page 372, 3rd edition) this is a serious mishap, more especially when the condyles of the femur are thrown back into the popliteal space, thus compressing and lacerating the artery. This is what I feared had occurred in the present case from the coldness of the limb when first examined by me, but on reduction it recovered its warmth rapidly.

That the patient, a strong robust man in the prime of life, should meet with an accident of the kind by a fall leads me to believe that there might perhaps have been some inherent weakness in the tissues of the joint itself to account for the luxation.

The dislocation continued unreduced for nearly 36 hours, and the limb was enormously swollen, yet the reduction was effected with the greatest facility, and the patient recovered the perfect use of the limb in a month without a single untoward symptom.

If such an accident had occurred in a European I doubt if the progress would have been quite satisfactory and the recovery so rapid.

No. 13.

A CONSPECTUS OF MEDICAL AND SURGICAL PRACTICE IN INDIA.

In Hospital at Perambore, Madras.

Under the care of Dr. Mackay.

DISINFECTING TREATMENT OF CHOLERA.

Case I.—Cholera Spasmodic ; Cure.

Private Dalliah, Æt. 27 years, was admitted at 9 A. M. on the 15th November 1862. Stated that he had been purged four times since 7 A. M. His pulse was good and his skin natural. A dose of Chalk mixture with Catechu and Opium was given, within half an hour after taking this, he had two loose motions, slightly coloured; the medicine was repeated. At 11 A. M. he vomited, and again at 1 P. M., both times bringing up fluid not quite colourless. At 2 P. M. he had a watery colourless motion, after which he complained much of cramps in his legs. An enema was then given, composed of Liquor Calcis Chlorinat ℥ xxx.; Aqua ℥ ii., and repeated in half an hour. A draught was also given composed of Liquor Calcis Chlorinat ℥ xx.; Aqua ℥ i.; and frictions with turpentine ordered to be used to the extremities. The enemas and draught were retained, and he had no return of vomiting or purging for three hours; but the cramps continued, pulse became weaker and his voice sank. During the night he had several watery colourless motions and vomited twice. Cramps continued. The enema was repeated, the quantity of Liquor Calcis Chlorinat being increased to 3 i. His pulse being very low, Ammonia Sesquicarb. in Aqua Camphoræ was ordered. The cramps now ceased and did not return, and the patient gradually rallied. During the day of the 16th he passed three watery colourless motions, no urine; but his pulse improved very gradually, and he was able to retain some arrow-root congee. A sinapism was applied to the loins in the evening. On the morning of the 17th he was reported to have had three watery motions of the same kind during the night. No urine; pulse the same; he was then ordered Pot. Chloras gr. v.; Acid Hydrochloric. dil. ℥ x.; Camphor gr. v.; to be given in water every two hours. He took five doses during the day, passed a little urine (first at 9 A. M.) and had three watery motions slightly tinged

with bile. From this time he gradually improved. His recovery was tedious, but he had no return of the cholera symptoms. On the 21st he had a threatening of congestion of the lungs, which passed off under the use of counter-irritation, &c., and he suffered from debility for some time. He is naturally a weakly man, and was not fit to return to his duty till the 14th of the following month.

CASE II.—CHOLERA SPASMODICA; CURE.

Private Sheik Mootooza, Æt. 27 years, came to Hospital on the 13th November, 1862, at 1 P. M. Said he had been purged several times; his pulse was good and he was given Chalk mixture with Catechu and Opium. During the next hour he was purged three times—the first two motions were slightly coloured, the third like rice water, and he vomited once. At 2 P. M. an enema with Liqr. Calcis Chlorinat ℥ xxx. was given and repeated in half an hour. These were both retained. At 3 P. M. he took a draught with Liqr. Calcis Chlorinat ℥ xx. Up to 5 P. M. he had no return of vomiting or purging, but complained of cramps, for which frictions with turpentine were used. Between 5 and 7 P. M. he had three scanty motions, after which he became very restless, and pulse very weak, his face looked gastly and voice sunk. An enema was given containing Liqr. Calcis Chlorinat ʒ i. and retained. During the night he took three doses of Ammon. Sesquicarb. gr. v. in Camphor mixture, and was able to retain some congee. On the morning of the 16th his pulse was hardly perceptible, but skin not quite cold; face and voice still sunk; no urine; no return of vomiting or purging. The Ammon. Sesquicarb. was continued, and he was ordered to have as much congee or chicken broth as he would take.

4 P. M.—Four motions since the morning, watery, but slightly coloured; no vomiting; no urine; no cramps; pulse slightly improved. Ammon. Sesquicarb. continued, and a sinapism applied to the loins. On the morning of the 17th was reported to have had two motions during the night, watery and again colourless; had passed no urine; pulse not improved. The following mixture was ordered. Potass. Chloratis gr. v.; Acid Hydrochl. dil. ℥ xx.; Camphor gr. v.; in Aquæ ʒ i.; to be given every two hours. At 4 P. M. he had taken five doses of the mixture, had had two watery coloured motions, retained some nourishment, and passed a little urine (the first 8 at A. M.) His pulse was improved. In this

case the secretion of urine was very slowly restored, and the patient had a tendency to coma. It was not till the morning of the 20th, that urine was passed in any quantity under the use of diuretics, counter-irritation to the loins and fomentations to the abdomen. From this time the patient rallied rapidly and was discharged on the 26th.

CASE III.—CHOLERA SPASMODIC ; CURE.

Private Sheik Ismal, Æt. 34 years, was admitted into Hospital on the 17th November 1862, at 11 A. M. Stated that he had been purged five times since 2 A. M., his pulse was pretty good, but he complained of cramps in the lower extremities and muscles of the chest. He was immediately given Liqr. Calcis Chlorinat ♏ xx.; Aqua. ʒ i. Up to 4 P. M. he had three watery colourless motions, had also vomited fluid of the same appearance. He had taken three of the above mentioned draughts. The cramps had been relieved by frictions with turpentine. His pulse was getting very weak, and voice sunk. The draughts were ordered to be continued, and an enema was given immediately, composed of Liqr. Calsis Chlorinat ʒ i.; Aqua ℥ iv.; this was retained for half an hour.

During the night he took six doses of Liqr. Calcis Chloriat, had five copious rice water evacuations. On the morning of the 18th, he passed some urine, his pulse was very weak, but the temperature of the skin good, and he had no more vomiting. He was now ordered Ammon. Hydroch. gr. v. ; Acid Nitro Muriatic dil. ♏ xv. ; Aqua ℥ iss., every three hours. The next motion was watery but slightly coloured. From this time he gradually improved, and was discharged well on the 25th.

[Two other well marked cases of cholera were admitted about the same time as the above, these were treated in a similar way, and both recovered. We are aware that it would be absurd to draw any conclusions from so small a number of cases, but it will be admitted that *five successive cures*, at a time when the disease was prevalent, and fatal, is encouraging ; and they are recorded in the hope of attracting attention to the Disinfecting Treatment of this disease, which, as far as we know, has not hitherto been fairly tried. We do not mean to say that Calcis Chlorinata is the best remedy to use, but it happened to be the only one of the class Dr. Mackay had at hand. It is a powerful stimulant which

may add to its efficacy, and it is remarkable how well it was retained in the above cases, whether given by the mouth or as an enema. Besides the remedies mentioned the floor of the hospital ward and the patients' beds were frequently sprinkled with a solution of Chloride of Lime, thus keeping up a continuous exhalation of chlorine gas, which must have been inhaled by the patients. The surface of the patients' bodies was sponged with a tepid lotion composed of Norton's Deodorising Fluid. Chloride of Lime was also put into the vessels in which the evacuations were received, these were at once carried away and their contents buried under ground. Whether any of these measures have any beneficial influence on the patients there cannot be a doubt that they should never be neglected, with a view to preventing the spread of the disease. The disinfecting treatment has been found useful in Typhus and Enteric Fever, and is surely, worthy of a fair trial in Cholera.]

Note.—Since the foregoing cases were forwarded for publication Dr. Mackay had occasion to treat another case of cholera. It would be tedious to detail the symptoms, and it is sufficient to state that they were well marked and severe. The remedies mentioned above were used, and the patient recovered most satisfactorily, making six successive recoveries under this plan of treatment.

In Hospitals at Dowlaishweram.

Under the care of Mr. Lowe.

Paraplegia; Recovery.

Private Chinnien, Æt. 26, Sappers and Miners.

1*st November* 1862.—Admitted complaining of pains about the ilium, ischiatic notch, and down the course of right sciatic nerve. He had been working in damp and rain. Locomotion not impaired; bowels very costive.

Hab. Pul. Purgativ. statim.

For four days the pains in hip and down leg no better; bowels had been kept freely open. A small blister was then applied over the seat of the pain in the ilium, and dressed with Morphia. This reduced the pain considerably, but it still remained along the course of the sciatic nerve. A blister was then applied to the sacrum, and dressed with blue ointment; bowels kept freely open; patient's face looking bright and cheerful.

On the *tenth* day the pains had vanished, and the patient, who had been kept in bed, requested to be permitted to go

to duty. When told to stand up he was discovered to be *paraplegic*, the left leg being less under controul than the right. He had no pain. He had lost all sensibility in *left* leg, but could feel when pinched in the *right* leg. Can *jerk* both legs upwards towards abdomen, both feel heavy and numb—especially the *left* leg.

Skin dry, cold; tongue dry, very red; appetite good; looks cheerful; no amaurosis, no facial paralysis; no ringing in the ears; no giddiness, no pain in the head, no cough, no palpitation; bowels well open, stools scybalous; urine free, has perfect controul over the bladder.

12*th.*—Mr. Lowe ordered both legs to be enveloped in flannel, and the patient to wear his warm clothing.

Emp. Lyttæ to the occiput.
Pul. Jalapæ c̄ Scammon.
℞ Strychniæ gr. i.
Acid. Sulph. dil. ʒ iii.
Inf. Chiretta ad ℥ xvi.
M. f. Mist. Dos. ℥ i. ter die.

Cold affusion to the head every morning and evening.

14*th.*—Sensation somewhat returned in *left* leg, but cannot move it; can move right leg a little. Bowels well open.

Continue medicine.

15*th.*—Can move left leg a little, there is also more sensibility in it; right leg about same; weight and numbness in both less; tongue less irritable; perspired freely last night; skin is warm and moist now; bowels well open.

19*th.*—Sensibility and powers of motion increasing; tongue more natural; pulse good; skin warm; bowels freely open.

25*th.*—Improving. Can feel better in both legs, and directs them with more certainty from one side of the bed to the other.

1*st December.*—Got out of bed this morning, and stepped a little, when assisted.

Increase Strychnine to gr. $\frac{1}{8}$ ter die.

8*th.*—Can stagger a little by the aid of walking sticks Great want of controul over both legs; gait uncertain.

Continue medicine.

11*th.*—Walks alone, but very unsteadily; the feet grasp the earth by degrees from the heel to the toes. Health good.

Continue medicine.

17*th.*—Walks much better; uses one walking stick only. He rolls like a man half-intoxicated, and now and then staggers as though he were going to fall.

27*th.*—Can walk without a stick. Is still unsteady.

3*rd January* 1863.—Little unsteadiness of gait; there appears an irresolution, as it were, about the feet when he walks along.

Continue medicine.

17*th.*—Improving fast. Wishes to go out of hospital.

Omit Strychnine.

℞ Acid. Sulph dil. ℥ iii.
Decoct. Cinchonæ ℥ x.; ℥ i. ter die.

26*th.*—Is now able to walk as well as usual.

2*nd February.*—Proceeded on a march to Secunderabad, perfectly recovered.

This is a very interesting case in several respects. It was quite clear that the man had no softening of the Pons varolii, medulla oblongata, or cerebellum; that there was no effusion of blood or serum about these parts; for he had no strabismus, no facial paralysis, no deafness, no congestion of the lungs or abnormal cardiac action, no priapism; but probably he had *congestion of the capillaries* of these parts, for his tongue was unnaturally red and its papillæ much enlarged, and his bowels were costive.

It appears also, from the continued pain referred to the hip and sciatic nerve, that the cauda-equina was the seat of congestion for a time.

Did the blister to the sacrum remove this? What caused the loss of sensation and motion afterwards? It will be remembered the man had been working for days in the rain and damp; his skin was *dry—cold;* there was no capillary transpiration.

We may look upon the case as one of severe *functional derangement* owing to an accumulation of morbid matters in the blood. The indication was, clearly, to restore the function of the skin, to remove fœcal accumulation, and to subdue cerebellar congestion, while one of the purest nervine tonics we possess restored the lost powers. This view of the pathology of the case will be explained by the course of the symptoms and the termination of the disease.

METEOROLOGICAL RESULTS *from the Madras Observatory Register, for the month of January,* 1863.

1863.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxm.	Observed Extremes. Minim.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mils.	Ins.	
1st	30·024	77·5	63·0	69·7	66·7	N. E.	68	.....	Fine.
2nd	·013	78·4	63·9	71·8	67·1	N. E.	105	.....	Light flying clouds.
3rd	·015	79·4	70·8	73·6	67·0	N. E.	153	.....	Passing clouds.
4th	·029	80·4	67·5	74·3	71·1	N. N. E.	147	.....	Frequently overcast.
5th	29·983	80·6	71·5	74·9	71·7	N. E.	169	....	Frequently overcast. Light shower
6th	·999	79·3	69·7	74·2	68·5	E. N. E.	142	.....	Passing clouds. [at 3 P.M.
7th	30·012	79·5	65·9	73·7	67·8	N. E.	132	.....	Chiefly fine.
8th	·017	79·5	67·8	74·2	69·4	N. N· E.	179	.....	Flying clouds.
9th	·021	79·8	72·4	75·4	69·0	N. N. E.	223	.....	Do.
10th	·048	79·8	69·6	74·4	69·3	N. N. E.	173	.....	Do.
11th	·074	79·6	68·4	73·9	67·7	N. N. E.	164	.....	Chiefly fine.
12th	·057	78·8	65·9	73·3	67·3	N. N. E.	130	.....	Light passing clouds.
13th	·015	78·0	64·7	70·8	65·8	N. N. E.	107	.....	Do. do.
14th	·010	77·8	63·6	72·5	66·9	N. E·	95	.....	Passing clouds.
15th	·039	79·4	66·8	72·1	66·6	N. E.	90	.....	Nearly clear.
16th	·031	79·0	65·3	73·2	67·7	N. E.	112	.. ...	Fine.
17th	·036	79·9	67·6	74·0	68·5	N. E.	112	.....	Nearly fine.
18th	·054	80·1	65·9	72·5	67·8	E. N. E.	82	.....	Fine.
19th	·066	79·9	66·7	72·7	68·5	N.E.byE.	87	.....	Do.
20th	·026	79·3	66·0	71·8	67·9	E. by N.	84	.....	Do.
21st	·022	80·3	65·2	73·1	68·7	E.	74	.....	Nearly fine.
22nd	.061	79·8	66·8	74·7	68·9	E. N. E.	107	.. ....	Light passing clouds.
23rd	·011	79·9	68·8	75·1	69·5	N.E.byE.	160	.....	Flying clouds.
24th	29,939	79·6	67·6	74·8	69·5	N. E.	153	.....	Fine.
25th	·987	80·4	68·8	76·0	70·1	N. E.	158	.....	Frequently clouded.
26th	·997	80·7	72·1	75·8	72·1	N. N. E.	209	.....	Overcast.
27th	·998	75·8	72·5	73·1	71·2	N. N. E.	186	1·46	Overcast. Frequent rain after 7A.M
28th	·973	78·6	70·6	74·0	71·0	N. E.	196	0·49	Overcast.
29th	·969	79·6	72·5	75·7	71·1	N.E.byN	155	.....	Nearly Overcast.
30th	·970	79·9	69·7	75·5	71·0	N.E.byN	163	.....	Flying clouds.
31st	·988	81·0	70·9	75·9	71·9	N.E.byN	141	.....	Frequently overcast.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 3 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

Meteorological Results *from the Madras Observatory Register, for the month of February,* 1863.

1863.	Barometer corrected and reduced to 32° Faht.	Standard Thermometer. Observed Extremes. Maxm.	Observed Extremes. Minim.	Daily means. Dry.	Daily means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·997	81·5	73·4	76·3	72·8	N. E.	173	.....	
2nd	·995	80·7	72·6	76·1	71·2	N. E.	141	.....	Flying clouds.
3rd	·950	79·6	69·0	74·2	70·1	N. E.	104	.....	Chiefly fine.
4th	·920	80·6	67·7	73·5	70·4	E. N. E.	62	.....	Fine dew.
5th	·914	81·2	66·7	73·9	71·1	E. N. E.	61	.....	Light hazy clouds.
6th	·938	81·8	66·8	72·9	69·7	E. N. E.	81	.....	Fine, but misty.
7th	·966	80·5	67·4	74·3	71·1	N.E.byE.	93	.....	Frequent clouds.
8th	·924	82·4	68·6	74·3	71·3	N. E.	91	.....	Hazy and cloudy.
9th	·894	82·5	68·5	75·7	72·4	N. E.	88	.....	Do. do. do.
10th	·883	82·5	69·5	76·0	72·4	E. by S.	64	.....	Light clouds.
11th	·906	81·9	69·4	77·0	72·9	S. E.	105	.....	Hazy.
12th	·932	83·6	72·4	78·6	74·8	E. by S.	95	.....	Fine clouds.
13th	·925	83·0	74·4	78·4	73·5	E.	132	.....	Do.
14th	·899	83·6	72·3	76·6	73·4	S. E.	116	.....	Fine.
15th	·904	83·4	71·4	77·7	73·6	S. E. by S.	127	.....	Do.
16th	·873	85·2	71·8	76·8	72·9	S. E. by S.	115	.....	Flying clouds.
17th	·889	83·9	70·5	76·9	72·5	S. S. E.	95	.....	Hazy day. Fine night.
18th	·917	83·4	70·4	77·6	72·1	E. S. E.	85	.....	Chiefly fine.
19th	·954	81·9	70·0	77·4	71·1	N. E.	153	.....	Frequently clouded. [midnight
20th	·982	83·6	76·6	79·8	73·2	N.E.byN.	208	.....	Overcast. Light rain drops a
21st	·962	84·2	76·4	79·4	74·3	N. E.	182	.....	Chiefly overcast.
22nd	·975	82·4	74·6	78·2	71·8	N.E.byN.	162	.....	Light hazy clouds.
23rd	·996	82·7	72·6	77·7	72·9	N. E.	141	.....	Occasional clouds.
24th	30·024	80·7	66·8	74·9	68·7	N. E.	125	.....	Fine.
25th	29·994	80·4	65·4	73·5	66·9	N.E.byE.	118	.....	Do.
26th	·993	80·6	65·1	72·7	67·4	E. N. E.	77	.....	Hazy.
27th	·960	80·9	65·4	73·4	69·4	E. N. E.	79	.....	Fine.
28th	·941	81·4	65·2	74·7	70·6	E. N. E.	88	.....	Hazy.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P. M., an the daily means are obtained by the application of hourly corrections deduced from twent years' observations. The cistern of the Barometer is 27 feet above the level of the sea, an the receiver of the Rain gauge is 3 feet from the ground, The wind and rain registered a for the current civil day—from midnight to midnight.

Meteorological Results *from the Madras Observatory Register, for the month of March*, 1863.

1863.	Barometer corrected and reduced to 32° Fahl.	Standard Thermometer. Observed Extremes. Maxm.	Observed Extremes. Minm.	Daily Means. Dry.	Daily Means. Wet.	Wind. Prevailing Direction.	Wind. Daily Velocity.	Depth of Rain.	General Remarks.
	Ins.	°	°	°	°		Mls.	Ins.	
1st	29·919	85·1	68·3	75·0	71·1	E.	79	.....	Cloudy before sunrise; fine after.
2nd	·865	85·0	68·4	76·2	71·7	S. E.	98	.....	Fine.
3rd	·812	86·3	68·5	78·3	74·0	S. S. E.	121	.....	Light hazy.
4th	·833	86·2	71·8	79·7	74·5	S. S. E.	132	.....	Fine day; hazy night.
5th	·893	85·1	71·4	79·0	71·9	S. E.	106	.....	Fine.
6th	·901	84·6	69·4	77·7	70·6	E. by S.	84	.....	Do.
7th	·875	85·7	68·8	78·3	70·2	E. by S.	87	.....	Do.
8th	·922	83·4	69·5	77·4	69·9	E.	93	.....	Fine day; flying clouds at night.
9th	·951	85·0	71·2	78·7	72·5	E.	102	.....	Light clouds.
10th	·918	86·4	72·4	80·2	74.8	E.	97	.....	Flying clouds.
11th	·868	86·5	74·3	80·3	75·7	E. S. E.	96	.....	Occasional clouds.
12th	·837	88·7	75·6	81·9	76·0	S. S. E.	105	.....	Fine, with passing clouds.
13th	·812	88·0	76·0	82·7	76·0	S. E. by S.	124	.....	Fine.
14th	·833	89·0	75·7	82·2	76·7	S. E. by S	131	.....	Light hazy clouds.
15th	·899	88·6	76·2	82·4	76·2	S. E. by E.	87	.....	Frequently clouded.
16th	·948	85·1	75·4	78·9	75·4	E. S. E.	50	0·65	Chiefly overcast. Rain at 4¼ & from
17th	·870	86·6	75·6	81·5	75·3	S. E.	72	.....	Light clouds. [8 to 9 A.M.
18th	·878	87·4	75·4	81·3	74·8	S. E.	80	.....	Fine.
19th	·939	86·4	75·4	81·3	74·8	S. E.	68	.....	Flying clouds.
20th	·939	87·6	74·8	81·2	76·1	S. S. E.	75	0·02	Frequently clouded.
21st	·945	85·8	76·8	81·1	75·4	S. E.	62	.....	Chiefly overcast.
22nd	·935	86·5	76·6	80·3	73·9	N.E. by E.	122	.....	Do.
23rd	·928	87·6	75·4	81·5	75·4	E.	51	.....	Fine, with light haze.
24th	·945	87·8	74·7	81·0	75·2	S. E.	57	.....	Fine.
25th	·924	88·5	73·7	81·4	75·4	S. E. by S.	65	.....	Light haze.
26th	·912	88·2	72·8	80·6	73·9	S. S. E.	63	.....	Fine.
27th	·873	87·9	72·9	80·0	74·7	S. E.	56	.....	Do.
28th	·865	88·7	72·6	81·2	74·5	S. S. E.	84	.....	Light clouds at night.
29th	·875	89·4	74·0	82·3	76·8	S. S. E.	111	.....	Fine.
30th	·868	88·7	74·6	82·3	75·6	S. by E.	111	.....	Light haze.
31st	·868	88·8	74·3	81·4	75·8	S.	110	.....	Flying clouds.

The Standard Barometer and Thermometers are read at 10 A.M., 4 P.M., and 10 P.M., and the daily means are obtained by the application of hourly corrections deduced from twenty years' observations. The cistern of the Barometer is 27 feet above the level of the sea, and the receiver of the Rain gauge is 3 feet from the ground. The wind and rain registered are for the current civil day—from midnight to midnight.

PART IV.

MEDICAL INTELLIGENCE.

Orders of the Madras Government on Reports on Vaccination for 1860 and 1861.

This report shows that there has been a gradual diminution in the number of persons said to have been vaccinated during the last seven years or from 1855 to 1861.

2. During the two years under review the operations were as per margin. For the decrease various causes have been assigned, viz., the want of co-operation on the part of the village authorities, the negligence or unfitness of several of the Vaccinators, the prejudices of the inhabitants in some districts, and the withdrawal, since the establishment of the new Police, of the aid of the Peons in obtaining subjects for vaccination.

1860—3,38,885.
1861—3,23,622.

3. In the absence, however, of efficient supervision of the Vaccinators, and with the opinion before them of the local Superintendents on the subject, the Government cannot accept the returns as trustworthy.

4. To arrive at a just conclusion of the working of the Vaccine Department, they must await the result of the introduction of the scheme for the improvement of that Department by its incorporation with the Civil branch of the Subordinate Medical Department. A revised G. O. on this subject, it is observed, was called for in the Military Department, under date the 6th June 1862, No. 2,045. His Excellency in Council trusts that the necessary arrangements will soon be completed.

His Excellency in Council has had under his special consideration the suggestion made by Dr. Rean at page 4 of the report, that vaccination should be declared indispensable for admission to the public service. The same subject is adverted to by Assistant Surgeon Doyle, at page 13.

5. In the original scheme for the Uncovenanted Service Examination every candidate was required to produce a Medical Certificate of physical fitness, and subsequently a special clause was added to the effect

Notification of 22nd May 1857. E.M.C., 12th June 1857, No. 777.

that the Certificate should state that he had been vaccinated or had had small-pox.

The operation of this rule, however, was found to entail great labor on the Medical Department, and in 1860, on the representation of the Central Examining Committee the Government resolved to dispense with a Medical Certificate altogether, except in the case of passed candidates actually seeking public employment.

Pros. 11th Oct. 1860, No. 1,486.

6. It appears however to His Excellency in Council that the labor of ascertaining the simple fact that the candidate has been vaccinated cannot be very great. It need not fall exclusively on the Zillah Surgeons: it might be shared by them with the Native Surgeons and the 1st and 2nd Apothecaries, and eventually on the reorganization of the Subordinate Medical Department it would fall chiefly on the new Superintendents of Vaccination. On the other hand there can be no doubt that the requisition of such a Certificate would greatly conduce to the spread of vaccination.

7. His Excellency in Council accordingly resolves to direct that no person be hereafter entertained in any public situation or admitted as a candidate for the Uncovenanted Service Examination, unless he can produce a Certificate to show that he has been vaccinated or has had small-pox. A general Certificate of physical fitness will be required as at present only in the case of passed candidates applying for actual employment. A Notification to this effect will be published in six successive issues of the *Fort St. George Gazette.*

8. The foregoing report, with the statements appended to it and this review, will be published among the Government printed selections.

(Signed) A. J. ARBUTHNOT,
Chief Secretary.

10*th February*, 1863.

Orders of the Madras Government on Report of Civil Dispensaries (1861.)

His Excellency the Governor in Council has perused with interest the report on the working of the Civil Despensaries during the year 1861.

2. The Returns show a slight reduction in the number of persons treated in these institutions as compared with the previous year. This is attributed, partly, to the greater healthiness of the

year as compared with 1860; and partly to the Government allowance for dieting the sick in the provincial Dispensaries having been reduced to a fixed sum of Rupees 50 a month.

3. The expenditure amounted to Rupees 2,35,149-9-8, including the cost of European medicines, which has not been entered in previous Returns. As in previous years the extent to which the Dispensaries have been aided by the local communities has varied considerably, depending mainly on the interest shown and encouragement given by the European officials.

4. At Manargoody in the Tanjore District, and at Palamcottah, contributions have been given on a liberal scale. The Friend-in-Need Society, which supports the Dispensary at the latter place, has, without any Government aid, become possessed of funded property amounting to Rupees 4,500, and has realized nearly Rupees 2,500 in annual contributions from the people of the District. The success of the Manargoody Dispensary, which has been noticed in previous reports, is creditable to the exertions of Native Surgeon Mootoosawmy.

5. At Cocanada the care bestowed on the Dispensary by the Civil Surgeon Dr. Lloyd, is favorably noticed by the Principal Inspector General, and merits the approval of Government.

6. At Nellore and Salem, on the other hand, the Dispensaries are apparently languishing owing, it would appear, at Nellore, to the want of co-operation on the part of the Civil authorities, and at Salem to the indifference of the Native community. It should be notified to the inhabitants of Salem that the Dispensary will be closed at the end of the present year, unless the wealthier inhabitants come forward to aid it.

7. The Governor in Council approves of the Principal Inspector General's suggestion that the Raneepett Dispensary should be re-transferred to Wallajapet.

8. The proposal to move the Lazaretto at Pallipott to the immediate neighbourhood of Cochin, appears to be deserving of consideration; but before deciding on it, the Government would wish to have the opinion of the Collector of Malabar.

9. Adverting to the remarks of Dr. Cleveland as to the want of a Lunatic Asylum on the Western Coast, it is observed that arrangements have been made for the establishment of such an institution at Cannanore.

10. The Principal Inspector General's recommendation that the flooring of the Idiot Asylum should be covered with asphalte is sanctioned. Orders will be passed on the subject in the Public Works Department.

11. The Government concur with Mr. Cole as to the expediency of altering the system under which the Presidency Despensaries at

Vepery and Triplicane are at present entirely dependent on Government support. Mr. Cole suggests that Government aid should in each case be limited to a fixed grant, and should be administered by a Committee, whose duty it will be to supplement it by raising local subscriptions. Mr. Cole will submit lists of the persons who should be appointed as Members of these Committees, and will state the amount to which the grant in each case should be limited.

12. Under the arrangements recently made for transferring to Messrs. Graves, Cookson and Co., the Book printing work hitherto done at the Government Press, the printing of the Principal Inspector General's Annual Report on Dispensaries will be printed by that Firm for so long as the present contract may continue, Mr. Cole will arrange with that Firm to print the Report for 1862 as soon as it is ready, and will submit it to Government in a printed form, adopting the same course with reference to all future reports.

Signed A. J. ARBUTHNOT,
Chief Secretary.

11*th March*, 1863.

Notification regarding the Pay of Medical Officers in Civil Employ.

(Fort St. George Gazette, February 17, 1863.*)*

In promulgating the following orders of the Government of India, the undersigned has the honor to intimate that the allowances of Medical Officers in Civil employ will, in future, be regulated strictly in accordance with the rules therein contained, according as such officers may belong to one or other of the two classes.

(Signed) H. M. MANGLES,
Offg. Civil Paymaster.

CIVIL PAYMASTER'S OFFICE,
FORT ST. GEORGE, 11*th February* 1863.

Extract from the Proceedings of the Government of India, dated 4th September 1862, No. 391 G.

Para. 2. His Excellency the Governor General in Council observes that Medical Officers in Civil employ are divided into two distinct classes, viz.:

1st. Medical Officers attached to Civil Stations or Political Agencies, and

2nd. Medical Officers attached to Public Institutions, such as the Medical College and to other Civil Staff appointment.

3. In case of the former class the entire allowance must, His Excellency in Council observes, be audited in the Civil Department adjusted as a Civil charge, and such Officers cannot during absence on leave claim any portion of their salary in the Civil Department under the Military Furlough Regulations of 1854. But in the case of the second class, the net Military pay must be audited and adjusted as a Military charge, and the Officers may, during absence on leave, draw Absentee allowance, from the Civil Department under the Military Furlough Rules of 1854, and the General Rules regarding the allowances of Military Officers in Civil employ.

4. Medical Officers in the Educational Department appear to His Excellency in Council to belong to the second class.

From the Financial Secretary to the Government of India; to the Officiating Civil Paymaster, Madras, dated Fort William Council Chamber, the 8th January 1863, No. 167 G.

SIR,

I am directed to acknowledge the receipt of your letter, No. 1,411 of the 8th October 1862, enquiring with reference to Financial Resolution No. 391 G. of the 4th September preceding, which divides Medical Officers in Civil employ into two classes, whether Officers attached to "Public Institutions"—such as Hospitals and Infirmaries—should be placed in the second class, and how the following appointments should be classified :—

1st. Presidency (District) Surgeons.
2nd. Physician of the General Hospital.
3rd. Surgeon of do.
4th. Superintendent of the Eye-Infirmary.
5th. Do. of the Lying-in-Hospital.
6th. Zillah or Civil Surgeons in the Provinces.
7th. Residency Surgeons (Political.)
8th. Medical Officers on the Neilgherries.
9th. Medical Officers in charge of Civil Engineers' Department in the Godavary and Kistna Districts.
10th. Principal of Medical College.
11th. Professor of do.
12th. Chemical Examiner.

2. In reply I am desired to explain that the expression Officers attached to public Institutions, &c., in the definition of the second class was intended to distinguish Officers employed in teaching the theory of medicine from Officers engaged in the practice of medicine who belong to the first class, and to state that all the appointments abovementioned belong to the first class, with the exception of numbers 10 and 11, which should be placed in the second.

(Signed) E. DRUMMOND,
Financial Secy. to Govt. of India.

Promotion of Warrant Officers of the Medical Department.

We have observed with much pleasure that the promotion of Warrant Officers of the Medical Department, of the Madras Army, has not been arrested by the transfer of supreme authority from the late Hon'ble Court of Directors of the East India Company to the Secretary of State for India. We welcome such occurrences with the greater pleasure as being calculated not only to reward signal merit on the part of individuals, but also to encourage the development of zeal and energy on the part of all the members of this most valuable public body of men.

The services of the Medical Subordinate Department have hitherto been so frequently the subject of flattering comment, wrung sometimes from not too willing lips, that we need not now dwell upon them. We refer to them, however, not without a hope that all future *alumni* of the Medical College may rival their predecessors who, in their time, have filled most responsible situations, and discharged highly onerous duties, with ability and discretion.

Three of the most distinguished of this grade have now been advanced to the *honorary* rank of Assistant Surgeon, with the relative rank, *(but not pay)* of Lieutenant: and, we believe that Honorary Assistant Surgeons Mason, Harris, and Dewsnap were eminently deserving of the honorable position to which they have attained. We congratulate them heartily on it, and wish them all a long enjoyment of their well merited reward.

We wish we could express equal satisfaction at the precise method selected for marking the approbation of Government. In this respect there might, we think, be a vast improvement, and of a nature calculated to render the promotion of individuals a source of direct benefit to the whole of the Department to which they belong.

This could only be fully done by the absolute removal of meritorious men from the grade of Apothecary to a list of Unattached, Local, or Honorary, Commissioned Medical Officers; or, by posting them, *with the pay and allowances of their new rank*, to the Invalid Establishment. They might at the same time, and so long as they continued effective, receive some Medical charge which would carry head money or Staff salary with it. This was formerly

the rule in the Ordnance Department, and thus promotion was accelerated and the benefit of each man's merit made to forward directly the interests of all those junior to him.

We can perhaps take no better example of the desirability of giving substantive promotion of this kind than by noticing the case of Assistant Surgeon Dewsnap.

This officer having, as an Apothecary, served in Bengal, was brought to the notice of the Madras Government in a report, by Dr. Innes, C.B., Deputy Inspector General of Her Majesty's Hospital, Cawnpore, dated 5th July 1859.

"I do myself the honor of addressing for the information of the Director General the following statement of the services of Apothecary George Dewsnap, who, early in 1857, came up with Her Majesty's 84th Regiment from Burmah to Bengal, and continued to do duty with the Corps during the whole mutiny and rebellion, and until the Regiment embarked for England. Though not a robust man, he bore without a murmur all the hardships and fatigues of the campaign and never missed a day's duty. He was assiduous and zealous, most attentive to the sick, and alert and judicious in all emergencies; through his systematic habits, quiet and firm manner, and thorough knowledge of his duty, the Hospital Establishment of H. M.'s 84th Regiment worked harmoniously and efficiently throughout the campaign, and I always considered myself most fortunate in having such aid in times so anxious.

"I fondly hope his good services will not be unrewarded. He will, I am very sure, soon fill with credit any appointment that may be open to him.

"This statement is quite unsolicited."

Upon the receipt of the foregoing the Government of Madras ordered as follows :—

"Apothecary Dewsnap not being at present admissible to the superior allowances authorized by G. O. G. 20th January 1845, No. 19, the Governor in Council regrets that he cannot be immediately advanced, but the earliest possible opportunity will be taken to testify in a substantial manner the appreciation by Government of his zealous and valuable services."

The Secretary of State, however, subsequently ordered that,

"The promotion of Apothecary Dewsnap to be a Senior Apothecary with all the advantages of the grade, but to be Supernumerary until it may come to his turn to be promoted in ordinary course, is also sanctioned as a special case."

Reference to the files of the Fort William Gazette show that in several instances Apothecaries and even Uncovenanted Civilian Medical men engaged in the same campaign, were promoted to the rank of Lieutenant, which in Bengal carries the pay with it; and they were also entitled to such staff salary as their appointments conferred on them. This of course placed these Honorary Assistant Surgeons in a much better position, both socially and in point of income, than the Madras Senior Apothecary was for some time allowed to occupy.

Practically Mr. Dewsnap's reward was the slightly elevated departmental rank of Senior Apothecary (a warrant grade) and 135 Rupees extra monthly pay. To these advantages he would have become entitled eventually by length of service: and, when that time arrived he would really have ceased to derive any benefit from his distinguished career. But on the other hand Bengal Apothecaries had been promoted to the rank and position of Commissioned Officers, and as such were eligible for the charge of Civil stations, Irregular Corps, &c., and had actually received and, prior to 1862, had held these appointments to which a staff salary is attached.

The foregoing considerations were submitted to the Government by the Principal Inspector General with a letter from the Adjutant General of the Army, conveying a favourable recommendation of Mr. Dewsnap's case by His Excellency Sir Hope Grant, K.C.B., Commander-in-Chief.

This was forwarded to the Secretary of State for India, with an intimation that Government concurred in the recommendation of His Excellency the Commander-in-Chief and the Principal Inspector General Medical Department, in so far as it related to Mr. Dewsnap's advancement to the Honorary rank of Assistant Surgeon, with the relative rank of Lieutenant.

With regard to emoluments, it was submitted for the favorable consideration of the Home Government that, as in the case of Honorary Assistant Surgeon S. Mason, an extra personal allowance of Rupees 150 per mensem should be granted to Mr. Dewsnap, in addition to his salary as Senior Apothecary.

This very liberal arrangement was not sanctioned by the Home authorities, as we learn from the following.

"Military Department.

Proceedings of the Madras Government.

Read the following :—

Extract from a Military Despatch from the Right Honorable the Secretary of State for India, dated 8th January 1863, No. 2.

3. I have much pleasure in authorizing you to confer on Senior Apothecary Dewsnap the honorary rank of Assistant Surgeon, with the relative rank of Lieutenant.

4. The grant of additional allowances to Mr. Dewsnap must depend upon the nature of the services which you may require him to perform. It must be clearly understood that he is entitled to no additional allowance in virtue of his honorary rank."

The principle here enunciated has been since extended to other departments, and though we have little hope that our representation will have any avail, we would briefly remark that the present system, of giving simply an honorary rank (unaccompanied by any scale of allowances which would permit retirement upon a superior pension) cannot be regarded as meeting fully the claims of deserving Warrant Officers.

And we should bear in mind that as long as the Honorary Assistant Surgeons are borne on the strength of the Warrant grade, so long is their promotion utterly useless in accelerating that of those junior to them in the Department.

We hope that this, if well represented and liberally considered, may yet be remedied, and that the merit of individual members of the Medical Department will be made a source of advantage to the service to which they belonged when earning their well deserved promotion.

We trust, too, that the ruling powers will recognize the desirability of according not only the rank but the pay of Lieutenant to Honorary Assistant Surgeons. If this were done their declining days would be found to yield them a sufficient competence to maintain the position which they have won with many years of arduous and meritorious service; but which are by no means adequately rewarded by the retiring pension of an Apothecary.

The late Native Surgeon Appavoo.

It is with no slight or passing regret that we have briefly to record the death of this distinguished Native Surgeon. The grade to which he belonged was one of the great suc-

cesses that attended the labours of the Professors in the Madras Medical College, and Francis Appavoo may be considered as, in some respects, one of the best of the class to which he belonged.

He entered the Public Service as a 2nd Dresser, and had the good fortune to do duty under Dr. Cleghorn, the eminent Botanist, then a District Surgeon in Madras. From him he acquired a taste for the study of Botany, and prosecuted this so successfully as to acquire a rare acquaintance with this department of Science. While studying for Native Surgeon he, in 1852, was awarded the Government Medal for a Prize Essay. He was subsequently appointed Assistant to Dr. Cleghorn in the Medical College, in the departments of Materia Medica and Botany; a post of considerable responsibility and in the duties of which he soon distinguished himself. Not satisfied with this signal success he continued his studies, and after a brilliant examination, was nominated a Native Surgeon on 4th May 1857.

He continued in his appointment in the Medical College until 1859, when he was permitted to resign it with a view to his being nominated to a lucrative post in the Forest Department under his old friend Dr. Cleghorn. During his tenure of office in the College he was distinguished by remarkable ability as a teacher—and by a courteous and considerate, though firm, demeanour to the students. By all the Professors he was esteemed as a most able and gifted Assistant.

While in the full discharge of his duties in the Forest Department Office at the Presidency, he was seized with severe illness, and after a few days, and when apparently convalescent, died somewhat suddenly.

His sedentary duties, his complete devotion to them for many hours every day, and the peculiar nervous depression so often experienced by those whose intellects are constantly employed, all tended to prevent his recovery.

It would be of little use to enumerate his literary labours which were chiefly confined to the compilation and correction of scientific works referring to the Botany and Materia Medica of India. His death occasions a loss that is not easily to be filled up—and by his friends he will long be remembered with a kindly memory.

He died on the 21st January, and on the following day

his remains were interred in the Pursewalkum Burial ground—nearly two hundred of his English and Native friends testifying their respect to his memory by attending the funeral. Among those who were present were the Principal of the Medical College, some of the Professors, many Members of the Profession, some of Appavoo's fellow students and many of his pupils, who all thus publicly recorded their sense of his personal worth and high professional and scientific position.

Dr. Shortt on Cotton Cultivation.

We are exceedingly glad to find that our friend Dr. Shortt of Chingleput, has obtained 1,000 Rupees and the Gold Medal of the Manchester Cotton Supply Association for an *Essay on Cotton Cultivation in India from Foreign Seed.*

We have received, from the Author, a copy of the Essay, which is published in the Journal of the Agricultural and Horticultural Society of India, by whom the awards were adjudged.

Should space allow us to do so we may again refer to this subject in detail: at present we must confine our remarks to a congratulation to Dr. Shortt upon the success that has attended his researches and upon the valuable work which he has produced.

Half Yearly Mortuary Reports.

In our next No. we hope to commence a series of papers to be continued every six months upon the results of an analysis of the weekly Mortuary Reports, which are now periodically published in the Fort St. George Gazette.

The Dispensary at Rajahmundry.

The Editor's Apology.

We desire in vindication of the Zillah Surgeon of Rajahmundry, to direct attention to the following letter from him with reference to a case reported by Mr. Karney in the present Volume of this Journal.

When just going to press we received the following, which we publish with every desire to redress, as far as possible, the unintentional wrong we have done to Dr. Macdonald.

RAJAHMUNDRY, 30*th March*, 1863.

To the Editor of the Madras Quarterly Journal of Medical Science.

SIR,—Upon page 216, of No. XI. of your Journal, there is a report by Mr. Karney, of successful treatment of an aperture in the throat of 4 years' standing in para. 3, of which this statement occurs,

"A month ago an attempt to re-unite the edges by sutures was tried at the Civil Dispensary, Rajahmundry, without success."

Mr. Karney must have been deceived by the patient, for this statement is quite without foundation, in fact no attempt of the kind was ever made, nor did the man ever appear as a patient at the Civil Dispensary, Rajahmundry, which is under my Medical charge.

I have the honor to be, Sir, your most obedient servant,

J. MACDONALD, *Zillah Surgeon, Rajahmundry.*

We communicated with Mr. Lowe, the Medical Officer, who forwarded to us Mr. Karney's paper, and whose cognizance of it we considered sufficient authority to justify publication.

The following is Mr. Lowe's reply:—

DOWLAISHWERAM.

To the Editor of the Madras Quarterly Journal of Medical Science.

MY DEAR SIR,—I am in receipt of your favour of the 21st, with the copy of Dr. Macdonald's letter, and I hasten to reply without delay, as I start in an hour for Masulipatam.

You will remember I stated to you in a letter prior to the publication of the case sent by Mr. Karney, that he had forwarded it before I was made aware that he had done so. I read over his rough notes, and the statement referred to was the accurate account as given by the man prior to the operation; but it would not have appeared, had Mr. Karney shown a tardier zeal, for I should have erased that paragraph prior to publication, not for its untruthfulness, of which neither I nor my Apothecary could know, but because I consider all such allusions tend in no way to the advancement of science, but often have the contrary effect.

As Dr. Macdonald correctly observes Mr. Karney was "deceived by the patient," and I am convinced his indignation will be felt alone towards the pitiable untrustworthy Hindus who seek from us, so repeatedly, relief from their sufferings with a lie in their mouths.

Mr. Karney left this station for Madras a few days ago, and I have therefore sent you this in vindication of what he reported for your Journal, and which I am convinced will fully satisfy you, and show Dr. Macdonald that if Mr. Karney has offended it was unwittingly, and should be "imputed not."

Believe me, very faithfully yours,

THOMAS LOWE, *Madras Sappers.*

We have ourselves to express our regret that any cause for complaint should have been afforded to Dr. Macdonald, and we hope that greater care on the part of our contributors may prevent our again being the means of giving offence. The *fact* of a previous unsuccessful operation was too essential to be omitted; but we feel that the *scene* of it should not have been named. We should, ourselves have erased the latter had it not accidentally escaped our observation.

BOOKS RECEIVED.

1.—An Illustrated Description of the Universal Microscope, Manufactured by Smith, Beck and Beck	Hare & Co., London.
2.—Journal of the Agricultural and Horticultural Society of India, Vol. II, Part IV	Calcutta.
3.—Report on Civil Dispensaries under the Madras Government, (1861)	Madras.
4.—Report on Vaccination in the Madras Presidency, in 1860 and 1861	Madras.
5.—The Land of the Permauls; or Cochin, its Past and Present. By Assistant Surgeon Francis Day, F.L.S.	Gantz Brothers, Madras.
6.—Reports on Mountain and Marine Sanitaria, &c. By Inspector General of Hospitals, D. Macpherson, M.D.	Madras.

PERIODICALS RECEIVED.

The Lancet	Received regularly.
The British Medical Journal	Do.
The Dublin Medical Press	Do.
The London Medical Review	Do.
The Dental Review	Do.
The Dublin Quarterly Journal of Medical Science	Do.
The North American Medico-Chirurgical Review	Do.
The American Journal of Science and Arts	Do.
Braithwaite's Retrospect, July to Dec. 1862	Do.
Ranking's Half-yearly Abstract, Vol. 36, Dec. 1862.	Do.
The Medical Critic and Psychological Journal	Do.
Edinburgh Medical Journal	Do.
The American Journal of Insanity	Do.
The do. Journal of the Medical Science	Do.
The do. Medical Times	Do.
Transactions of Bombay Medical and Physical Socy.	Do.
The Pharmaceutical Journal	Do.
The Stethescope for	January 1863.
The Canada Lancet	No. 1.
The Indian Lancet	Received irregularly.
Dublin Hospital Gazette	Do.

END OF VOLUME SIXTH.

APPENDIX.

MEDICAL DIRECTORY FOR SOUTHERN INDIA.

For the Half Year commencing 1st April, 1863.

CIVIL DEPARTMENT.

I.

MADRAS MEDICAL COLLEGE.

PRINCIPAL.

JOHN EMELIUS MAYER, ESQ.

PROFESSORS.

Arranged in order of their permanent appointment.

J. E. MAYER, Esq.....*Professor of Chemistry.*
A. BLACKLOCK, Esq.....*Professor of Medicine and Clinical Medicine.*
H. B. MONTGOMERY, Esq., A.B., M.D., F.R.C.S.I., &c. } *Professor of Botany, Materia Medica, and Therapeutics.*
J. L. PAUL, Esq., A.M., M.D.....*Professor of Surgery and Clinical Surgery.*
W. N. CHIPPERFIELD, Esq.....*Professor of Anatomy and Physiology.*
J. URQUHART, Esq., M.D.....*Professor of Medical Jurisprudence.*
G. SMITH, Esq., M.D.....*Professor of Midwifery and Diseases of the Eye.*

ASSISTANTS.

Mr. R. WILKINS.....*Demonstrator of Anatomy and Curator of the Museum.*
Mr. J. J. WOOD.....*In Botany and Materia Medica.*
Mr. R. HARVEY.....*In Chemical Department.*
MR. J. E. WATKINS.....*English Teacher.*
M. JUGGERNADUM NAIDOO.....*Native Assistant.*
P. R. NARRAINSAWMY MOODELLY.....*Librarian.*

II.

THE UNIVERSITY OF MADRAS.

THE FACULTY OF MEDICINE.

President.

J. SHAW, Esq., F.R.C.S.

Members.

Hon. A. J. ARBUTHNOT, Esq.
Hon. T. PYCROFT, Esq.
Major General C. A. BROWNE.
J. E. MAYER, Esq.
J. SANDERSON, Esq., *Eur. Furlough.*
W. J. VAN-SOMEREN, Esq., M.D.
SAMUEL JESUDASEN PILLAY.
G. W. FLYNN, Esq., M.D.
J. W. MUDGE, Esq., M.D.
R. COLE, Esq.
E. B. POWELL, Esq.

III.

CORONER OF MADRAS.

J. URQUHART, Esq., M.D.

DEPUTY CORONER OF MADRAS.

R. S. MAIR, Esq., M.D.

IV.

MEDICAL DISTRICTS IN MADRAS.

1st District.

W. J. VAN-SOMEREN, Esq., M.D., *Surgeon.*

Has charge, within the limits of jurisdiction of the High Court, of Black Town and Royapoorum; with charge of Jails, Native Infirmary, Leper Hospital, Emigration Department, and Madras Railway.

2nd District.

J. W. MUDGE, Esq., M.D., *Surgeon (on other duty).*

H. B. MONTGOMERY, Esq., M.D., *Acting Surgeon.*

Has charge, within the limits of the jurisdiction of the High Court, from Poonamallee Road and all to the North, not included in the 1st District; with charge of Vepery Dispensary, Female Asylum, Powder Mills and Gun Carriage Manufactory: is also Consulting Physician to the Lunatic Asylum.

3rd District.

C. MURRAY DUFF, Esq., M.D., *Surgeon.*

Has charge, within the limits of jurisdiction of the High Court, from Poonamallee Road Southward as far as, and on, the Adyar, East of the Mount Road to the Mowbray Road and D'Monte's house; with charge of the Male Asylum.

4th District.

H. W. PORTEOUS, Esq., *Surgeon.*

Has charge, within the limits of Jurisdiction of the High Court, of all South of the Club; with charge of Triplicane Dispensary and Police.

V.

PHYSICIANS AND SURGEONS IN MADRAS.

AITKIN, WM., Esq., M.D.....*Poonamallee Road.*

BLACKLOCK, A., Esq.....*General Hospital.*

BURN, W. H. S., Esq.....*34th Regt. L. I.*

CHIPPERFIELD, W. N., Esq.....*Fort St. George.*

COLE, R., Esq.....*Adyar.*

CORNISH, W. R., Esq.....*Mount Road.*

DUFF, C. M. Esq., M.D.....*Nungumbaukum.*

FLYNN, G. W., Esq., M.D.....*Mount Road.*

GORDON, H. G., Esq., M. D.....*H. M.'s 69th Foot.*

JESUDASEN PILLAY, S., Esq.....*Tondiapett.*

MADDEN, F., Esq.....*H. M.'s 69th Foot.*

MAIR, R. S. Esq., M.D.....*Poonamallee Road.*

MAYER, J. E., Esq.....*The Luz.*

MCKENNA, J. E., Esq., M.D.....*Commander-in-Chief's Road.*

MONTGOMERY, H. B., Esq., M.D.....*Kilpauk.*

MUDGE, J. W., Esq., M.D.....*Mowbray Road.*

ORR, J. H., Esq., C.B., M.D.....*Absent on duty*

PAUL, J. L., Esq., M.D.....*General Hospital.*

PORTEOUS, H. W., Esq.....*Mowbray Road.*

ROGERS, M., Esq.....*Elphinstone Hotel.*

SCOTT, A. J., Esq., M.D.....*Europe, S. C.*

SHAW, G. J., Esq., M.D.....*Shawfield, Egmore.*

SHERIFF, MOODEEN, Esq.....*Triplicane.*

SHAW, J., Esq.....*Absent on duty.*

SMITH, GEORGE, Esq., M.D.....*Eye Infirmary, Poonamallee Road.*

THOMPSON, D. R., Esq., M.D.....*Vepery.*

URQUHART, J., Esq., M.D.....*Poonamallee Road.*

VAN-SOMEREN, W. J., Esq., M.D.....*Royapooram.*

WALTER, G. W., Esq.....*4th Regt. N. I.*

WHITTAKER, J. H., Esq.....*H. M.'s 69th Foot.*

WYNDOWE, S. J., Esq., M.D.....*44th Regt. N. I.*

VI.

PORT AND MARINE SURGEON.

H. B. MONTGOMERY, Esq., A.B., M.D., F.R.C.S.I., &c.
W. N. CHIPPERFIELD, Esq., *Acting.*

VII.

CHEMICAL EXAMINER TO GOVERNMENT.

A. J. SCOTT, Esq., M.D., *Eur. S. C.*
J. E. MAYER, Esq., *Acting.*

VIII.

EMIGRATION SURGEON.

W. J. VAN-SOMEREN, Esq., M.D.

IX.

EXAMINER OF MEDICAL ACCOUNTS.

E. G. BALFOUR, Esq., *Absent on duty.*
J. W. MUDGE, Esq., M.D., *Acting.*

X.

CONSULTING PHYSICIAN MADRAS RAILWAY COMPANY.

W. J. VAN-SOMEREN, Esq., M.D.

XI.

SUPERINTENDENTS OF VACCINATION.

J. H. ORR, Esq., C.B., M.D., *Depôt.*
D. R. THOMPSON, Esq., M.D., *Madras.*
PULNEY ANDY, Esq., M.D., *Malabar.*

XII.

MADRAS MINT, ASSAY DEPARTMENT.

G. J. SHAW, Esq., M.D., *Assay Master.*
A. J. SCOTT, Esq., M.D., *Asst. Assay Master, Eur. S. C.*
W. AITKEN, Esq., M.D., *Acting do.*

XIII.

THE MEDICAL REFEREES OF LIFE ASSURANCE SOCIETIES.

J. L. PAUL, Esq., M.D. & A.M.....*The Madras Equitable.*
———————————.....*Church of England.*
W. J. VANSOMEREN, Esq., M.D.....*The Albert, Medical and General.*
H. W. PORTEOUS, Esq.....*Universal.*
———————————.....*Colonial.*
R. S. MAIR, Esq., M.D.....*Royal Insurance.*

XIV.

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Eye Infirmary, Poonamallee Road.	G. SMITH, Esq., M.D., *Surgeon.* Mr. T. B. TURNBULL, *Apothecary.*
Civil Dispensary, General Hospital Street.	J. L. PAUL, Esq., A.M., M.D., *Surgeon.* Mr. H. H. LYNSDALE, *Apothecary.*
Native Infirmary and Idiot Asylum, Attapalium Road.	W. J. VAN-SOMEREN, Esq., M.D., *Surg.* Mr. ABEL GROVE, *Apothecary.*
Leper Hospital, Attapalium Road.	W. J. VAN-SOMEREN, Esq., M.D., *Surg.* ————————, *Apothecary.*
Triplicane Dispensary Royapettah.	H. W. PORTEOUS, Esq., *Surgeon.* MOODEEN SHERIFF, Esq., *Native Surg.* Mr. G. A. TRUTWEIN, *Apothecary.*
Chintadrepettah Dispensary.	J. H. ORR, Esq., *Surgeon.* M. ROGERS, Esq., *Acting Surgeon.* Mr. JUDGE, *Apothecary.*
Port and Marine Dispensary, Custom House.	H. B. MONTGOMERY, Esq., M.D., *Surg.* W. N. CHIPPERFIELD, Esq., *Actg. Surg.* Mr. STIRLING, *Apothecary.*
Lunatic Asylum, Kilpauk.	S. MASON, Esq., *Resident Medl. Offr.* Mr. J. W. CLARK, *Apothecary.* Mr. PECK, *Asst. Apothecary.*
Lying-in-Hospital and Dispensary, Egmore.	W. AITKIN, Esq., M.D., *Superintendent.* Mr. J. GORMAN, *Apothecary.*
Vepery Dispensary, Choolay.	J. W. MUDGE, Esq., M.D., *Surgeon.* H. B. MONTGOMERY, Esq., M.D., *Acting Surgeon.* Mr. G. BAMFORD, *Apothecary.*
Free Church of Scotland Charitable Institution.	D. PATERSON, Esq., M.D., *Surgeon.* Mr. G. O'HARA, *Apothecary.*
Black Town Dispensary, Saulay Street.	SAMUEL JESUDASEN PILLAY, Esq., *Surg.* ————————, *Apothecary.*

XV.

MILITARY HOSPITALS AND DISPENSARY.

Governor's Body Guard, Esplanade.	J. H ORR, Esq., *Surgeon.* M. ROGERS, Esq., *Acting Surgeon.* Mr. S. JOHNSTON, *Apothecary.*
H. M. 69th Regt. of Foot General Hospital.	H. G. GORDON, Esq., M.D., *Surgeon.* J. H. WHITTAKER, Esq., *Asst. Surgeon.* F. MADDEN, Esq., *Asst. Surgeon.* Mr. H. WALE, *2nd Apothecary.*
4th Regt. M. N. I., Royapooram.	G. W. WALTER, Esq., *Asst. Surgeon.* Mr. J. BORNSHIN, *Asst. Apothecary.*
34th Regt. M. N. I., Vepery.	W. H. S. BURN, Esq., *Surgeon.* Mr. LAFFREY, *Asst. Apothecary.*
44th Regt. M. N. I., Perambore.	S. J. WYNDOWE, Esq., M.D., *Asst. Surg.* Mr. TRUTWEIN, *Apothecary.*
Fort Saint George Dispensary, St. Thomé Street, Fort.	H. B. MONTGOMERY, Esq., M.D., *Asst. Surg.* W. N. CHIPPERFIELD, Esq., *Actg. Asst. Surg.* Mr. DEWSNAP, *Senior Apothecary.*

XVI.

MEDICAL OFFICERS OF PUBLIC INSTITUTIONS.

Military Male Orphan Asylum	C. M. DUFF, Esq., M.D.
Do. Female do. do.	J. W. MUDGE, Esq., M.D. *on other duty.*
Powder Mills	H. B. MONTGOMERY, Esq., M.D., *Acting.*
Gun Carriage Manufactory	
Civil Male and Female Orphan Asylums.	J. W. VAN-SOMEREN, Esq., M.D.
H. M. Jail	
Penitentiary	WM. AITKEN, Esq., M.D.
	MR. JONES, *Apothecary.*

XVII.

DENTIST.

CLARKE, S. G., Esq.....*Pantheon Road.*

XVIII.

CHEMISTS AND DRUGGISTS.

BARRIE AND CO.....*Vepery Dispensary, Poonamallee Road.*
DO. (BRANCH).....16, *Mount Road.*
DEBEAUX AND CO.....*Esplanade.*
FLYNN, G. W. AND CO.....135, *Mount Road.*
LEE AND CO.....10, *Popham's Broadway.*
LEFEBOUR.....*Do. do.*
NORTON, G.....*John Pereira's.*
SCOTT AND CO.....*Popham's Broadway.*
SECLUNA AND CO.....*Vepery.*
YAULL AND SON.....*Popham's Broadway.*

MILITARY DEPARTMENT.

In the following pages the Titles of the Medical Officers of the Madras Army are thus indicated.

1 F.R.C.S., England.	5 L.R.C.S., Edinburgh.	9 F.R.C.P.	13 Fac. Phy. Sur. Glas.
2 F.R.C.S., Edinburgh.	6 L.R.C.S., Ireland.	10 M.R.C.P.	14 F.G.S.
3 F.R.C.S., Ireland.	7 M.D.	11 L.A.C.	15 Grad. Med. and Surg. Madras Medical College.
4 M.R.C.S., London.	8 M.B.	12 L.M.	
† A.B.		†† A.M.	††† F.L.S.

* prefixed to an Officer's name indicates the possession of a Medal for War Service.

Nominal List of Medical Officers of Her Majesty's Indian Forces on the Establishment under the Presidency of Fort St. George, showing their Professional Titles, dates of Rank, and how employed.

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Inspector General.	Nominal Service to 31st March 1863. Y.	M.	D.	Corps or Department.	Station.
	Principal Inspector General.									
1	Robert Cole ...	4	8th May 1827	24th Sept. 1840	28th April 1861	35	10	23	Prin. Ins. Gl. Med. Dept. Hony. Surg. to Her Majesty's ...	Madras.
	Inspector General of Hospitals.									
	*Duncan Macpherson ...	7	18th May 1836	11th Dec. 1852	8th Jan. 1858	26	10	13	Hony. Phy. to H. Majesty.	Europe s. c.
	James Shaw ...	1	19th May 1834	31st Jany. 1851	13th Jany. 1860	28	10	12	Ag. Insp. Gl. of Hospls....	
	Deputy Inspector General of Hospitals.									
					Depy. Inspector General.					
	*John Templeman Maule..	5	14th May 1825	25th May 1838	26th Feb. 1851	37	10	17	Hyd. Sub. Force. ...	[*Fur.*
5	Frederick Cooper ...	4-11	4th Aug.	17th Dec.	12th do 1856	35	1	27	Northern Division ...	Vizagapatam, *on*
	John McKenna ...	7	20th May	31st do	20th Oct. 1857	34	10	11	Presy. and Centre Divn..	Madras.
	John Lovell ...	4	30th Aug.	3rd June 1845	11th July 1859	33	7	1	Ceded Districts ...	Europe s. c.
	Charles Irving Smith ...	10-4-11	15th May 1830	29th do 1848	4th Oct. 1862	31	10	16	Pegu Division ...	Europe s. c.
	*James Dorward ...	.....	12th Feb. 1832	31st August.	13th Jany.	31	1	16	Mysore Division ...	Ag. Ceded Dist.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Date of Rank as Depy. Inspector General.	Nominal Service to 31st March 1863. Y.	M.	D.	Corps or Department.	Station.
	Deputy Inspector General of Hospitals—*(Continued.)*									
10	John Emelius Mayer ...	4	26th Mar. 1833	28th Feb. 1850	28th Feby. 1863	30	0	5	Offg. as Med. Storekeeper & Prof. of Che. & Act. Che. Ex.	Presidency.
( )	James Shaw ...	1	19th May 1834	31st Jany. 1851	do	28	10	12	Ag. Insp. Gl. of Hospls...	Madras.
	*William Mackenzie, C.B...	††-7	14th Jan. 1835	5th Feb. 1850	21st Nov. 1862	28	2	17	Ag. Dy. In. Gl. of Hospls.	Mysore.
	Edward Green Balfour ...	5-4	2nd June 1836	31st Dec.	28th do	26	9	28	Ex. of Acct. Med. Dept..	Ag. Dy. Inspr. Gl. of Hospls. Pegue Divn.
	*John Henry Orr, C.B. ...	.....	22nd Feb. 1837	17th July 1853	1st March 1863	26	0	7	Gar. Sg. Fort St. George.	Actg. Depy. Inspr. General.
	*John Andrew Reynolds...	4	28th do	24th Nov.	10th do	26	0	0	Gar. Surgn. Cannanore...	Actg. Depy. Inspr. Genl. of Hospls.
	Surgeons Major, Regimental and Staff Surgeons.									
					Surgeon Major.					
15	John Colin Campbell ...	5-4	15th Nov. 1833	9th Aug. 1850	13th Jany. 1860	32	4	15	Durbar Surgeon. Mysore..	Eur. s.c.
	Robert Henry Rennick ...	4	21st Decr.	13th Feb. 1847	do	28	3	13	31st Regt. T. L. I. ...	Waltair.
	*Thomas Caverhill Jerdon..	4	11th Sept. 1835	29th do	do	27	7	19	Services placed temply. at the disposal of the Govt. of India. ...	
	James Sanderson ...	5	27th Oct.	15th Mar. 1853	do	26	5	5	.....	Europe *Fur.*
	William George Prichard..	7-12-5	4th April 1836	15th Decr.	do	25	11	26	.....	Europe s. c.
20	*Joseph Myres Jackson ...	4	2nd June 1837	1st Jany. 1854	do	25	9	28	Garrison Surgeon ...	Bellary.
	*Char. Geo. Edwin Ford...	1-12	29th Aug.	8th do	do	25	7	3	Staff Surgeon. ...	Rangoon.
	*Donald MacFarlane ...	7-9	11th Jan. 1838	14th Feb.	do	25	2	20	Garrison Surgeon ...	Bangalore.
	Henry William Porteous ..	5	10th Feb.	24th do	do	25	1	18	Surgeon 4th District ...	Madras.
	John Kennedy ...	7-5	27th Mar.	29th Oct.	do	25	0	4	Garrison Surgeon ...	Trichinopoly.
25	David Thomas Morton ...	4	7th do	29th do	do	25	0	4	Actg. do do ...	Cannanore.
	*Wil. Campbell Maclean...	7	29th April	9th Dec.	do	24	11	2	.....	Eur. *special Fur.*
	John Borlase Stevens ...	4-11	29th do	1st Jany. 1855	do	24	11	2	18th Regt. N. I. ...	Cannanore.

	*Char. William Pickering...	4-11	21st Aug. 1838	21st do		do	24	7	10	H. M. 108th Regt. of Foot	Jaulnah.
	*Henry Edward Hadwen...	4	26th Jan. 1839	16th Mar.		do	24	2	6	.....	Europe s. c.
30	James Cecil Burton ...	7-5	14th May	26th July		do	23	10	17	41st Regt. N. I. ..	Arcot.
	*Charles Timmins ...	1-4-11	1st Sept.	10th Feb.	1856	do	23	5	29	.....	Europe s. c.
	Henry Smith ...	4-12	22nd do	12th do		do	23	5	18	2nd Brig. Rl. Arty. Med. charge H. & Foot Arty.	Kamptee.
	Edward Samuel Tribe ...	4	16th Oct.	30th Mar.		do	23	5	6	....	Europe s. c.
	Charles Barclay ...	.....	3rd Decr.	27th April		do	23	3	28	25th Regt. N. I. ...	Mercara.
35	Moses Rogers ...	4-11	3rd do	16th May		do	23	3	28	H. M. 3d Royal H. Brigade	Actg. Gar. Surg. Fort St. George.
	James Lancaster Ranking...	4	6th do	18th Sept.		do	23	2	25	H. M. 23d Brig. Rl. Arty. Med. charge H. & F. A.	Secunderabad.
	James Peterkin ...	7-4-11	6th do	28th Feb.	1857	do	23	2	25	.....	Europe s. c.
	John Pringle ..	7-5-12	6th do	18th do		do	23	2	25	H. M. 102d Regt. Rl. Fs.	Cannanore.
	*William Johnson ...	7-5-4	6th do	28th Aug.		do	23	2	25	d. d. 3rd Royal HorseBrig.	Bangalore.
40	Ambrose Blacklock ...	5	8th Feb. 1840	1st Dec.		8th Feb.	23	1	20	Physician Genl. Hospl....	Madras.
	*John William Mudge ...	7-5	8th Mar.	25th Feb.	1858	8th Mar.	23	0	23	Surg. 2nd Dist. Actg. Med. Exmr. of Accounts. ...	Madras.
	*William Wilson Rawes...	.....	14th April	29th June		14th April	22	11	26	4th Regt. L. C... ...	Saugor.
	James Mackintosh ...	.....	22nd Dec.	5th Aug.		22nd Dec.	22	3	10	32nd do. N. I. ...	Secunderabad.
	William Scott ...	7-5	30th Jan. 1841	9th April		.....	22	2	2	H. M. 105th Regt. of Foot	Trichinopoly.
45	Wil. Hewitt Seton Burn...	4-12	17th Feb.	5th May		15th Nov. 1861	22	1	11	34th Regt. C. L. I. ...	Singapore.
	John Kinloch Ogilvie .	7	17th do	10th Aug.		17th Feb.	22	1	11	d. d. 30th Regt. N. I. ...	Bellary.
	*Alex. Charles MacLeod...	4	8th Mar.	26th Oct.		.....	22	0	28	.....	
	Robert Rushbrook Sutleffe	4	8th do	19th Nov.		.....	22	0	28	5th Regt. N. I. ...	Thyetmyoo.
	James Ratten ...	4-11	2nd April	30th do		15th Aug. 1862	21	11	28	3rd do L. C. ...	Kamptee.
50	*William Forrester ...	.....	1st May	30th do		.....	21	11	0	d. d. 16th Regt. N. I. ...	Hurryhur.
	Henry James Penny ...	1	3rd Oct.	30th do		8th Feb. 1862	21	5	28	2nd Regt. L. C ...	Secunderabad.
	Charles Murray Duff ...	7-5-12	4th Jan. 1842	2nd Jany.	1860	.....	21	2	27	Surgeon 3d Dist. ...	Madras.
	Henry Young ...	4	8th do	19th Feb.		.....	21	2	23	6th Regt. N. I. ...	French Rocks.
	Henry T. Webster Harper.	4	30th do	1st Mar.		.....	21	2	2	22nd do ...	Bangalore.
55	Chris. Beadnell Craske. ...	4-11	15th Feb.	2nd Sept.		.....	21	1	0	10th do ...	Jubbulpore.
	James Kirkpatrick ...	7-5	30th April	28th Dec.		30th April 1862	20	9	1	Surg. to Commission ...	Mysore.
	Robert Pilkington Linton.	4-12-11	2nd Aug.	8th Feb.	1861	.....	20	7	29	1st Regt. L. C. ...	Bellary.
	Hugh Francis Clarke Cleghorn.	7	16th do	21st do		.....	20	7	20	Consr. of Forests Madras Presy. Ser. placed tem. at the dis. of Govt. of India.	Punjaub.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	Date of Rank as Surgeon.	Nominal Service to 31st March 1863. Y.	M.	D.	Corps or Department.	Station.
	Matthew Kane ...	††-7-12	20th Aug. 1842	1st Mar. 1861	20	7	11	Dy. Assay Master ...	Bombay.
60	*George Mackay ...	7-10-5-12	28th Dec.	1st do	20	3	4	44th Regt. N. I.—d. d. 17th Brig. Royal Arty...	St. Tho's Mount.
	Alexander Hunter ...	7-2-12	2nd Feb. 1843	14th April	20	1	26	Supt. of the Sch. of Arts..	Madras.
	Hamlin Nott ...	4-10	12th do	28th May	20	1	16	.....	Europe s. c.
	Frederick Fletcher ...	5-12	4th April	15th June	19	11	26	27th Regt. N. I. ...	Cuddapah.
	James Hay Blackwell ...	5-12	27th Jany. 1844	13th Aug.	19	2	5	12th do ...	Kamptee.
	Andrew James Scott ...	7-5-12	1st March	18th Nov.	19	1	0	Asst. Assay Master ...	Europe s. c.
65	Wil. Wentworth Heude ...	7-5-12	25th do	30th do	19	0	7	Civil Surgeon ...	Nagpore.
	John Colebrook ...	4-11	1st April	22nd Feb. 1862	19	0	0	....	Europe s. c.
	William Williamson ...	5	16th do	6th do	18	11	14	.....	Europe s. c.
	George Smith ..	7-5	3rd Aug.	4th Oct.	18	7	28	Supt. Eye Infirmary.	
70	Walter Alexander Leslie ...	4-11	11th Feb.	31st do	18	1	17	2nd Regt. N. I. ...	Tonghoo U. O. to Madras.
	Frederick Lewis Clementson...	4	20th Aug.	21st Nov.	17	7	11	....	Europe s. c.
	John Brett ...	7-††-11-12	12th Sept.	31st Jany. 1863	17	6	18	14th Regt. N. I. ...	Bangalore.
	William Aitken. ...	7-5-12	26th Jan. 1846	25th Feb.	17	2	5	Supt. Lyg. in-Hosl., Actg. Asst. Assay Master.. ...	Madras.
	*Patrick Gerald FitzGerald. ...	7-12-3	20th March	1st Mar.	17	0	11	.....	
75	William Judson vanSomeren...	7-5-12	7th April	1st do	16	11	23	Surgeon 1st District.. ...	Madras.
	James Boyd Fleming ...	7-5	17th do	10th do	16	11	13	Resy. Surgeon ...	Hyderabad.

				No. and Rank in this grade.							
	*Duncan Mackenzie ..	5	5th May 1846	1st Class.		...	16	10	26	... .	Europe s.c.
	*George Bailie ...	7	19th do	do		...	16	10	22	19th Regt. N. I. ...	Secunderabad.
	Edward Dixon ...	5	3rd June	do		...	16	9	27	29th do ...	Saugor.
80	James Cowpar ...	4-12	20th Jan. 1848	do		...	15	2	11	Civil Asst. Surgeon ...	Singapore.
	Arthur Langford T. Cooke ...	4	9th March	do		...	15	0	22	.....	Australia *Fur.*
	*Lestock Wilson Stewart ...	4	28th May	do		...	15	10	2	Medical Officer ...	Ootacamund.
	John Robert Theobalds ...	4	20th Dec.	do		...	14	3	12	....	Europe s. c.
	George Flower Trimnell ...	4-4	27th do	do		...	14	3	5	1st Regt. N. I. ...	Hoosingabad.
85	James Donaldson ...	7-5	20th Feb. 1849	do		...	14	1	18	....	Europe s. c.
	Charles James Rogers ...	4	29th April	do	10	...	13	11	10	Medical Officer ...	Ootacamund.
	*Edward John Waring ...	4-12	22nd June	do		...	13	9	8	Phy. to H. H. the Rajah of Travancore. ...	Europe s. c.
	*George Whittaker Walter ..	4-12	12th Oct.	do		...	13	5	19	d. d. 4th Regt. N. I ..	Madras.
	John Liston Paul ..	7-5-††	20th Jany. 1850	do		...	13	2	11	Surgn. General Hospl. ...	Madras.
90	John George Gibbs ...	4-12	do	do		...	13	2	11	....	Europe *Fur.*
	H. Rowley Donaldson Marrett..	4	16th Feb.	do		...	13	1	12	Zillah Surgeon ...	Salem.
	John Wilson ...	4-11	9th March	do		...	13	0	12	Civil Assistant Surg. ...	Jubbulpore.
	William Augustus Jacob ...	7-12-4	20th do	do		...	13	0	11	d. d. 24th Regiment N. I.	Vizianagrum.
	John Miller ...	7-5-12	8th July	do		...	12	8	23	21st Regt. N. I. ...	Vellore.
95	Henry Robert Oswald ...	7-5-12	24th do	do		...	12	7	8	Commission in Mysore. ...	Shemoga.
	*John Thomas Williams ...	4	20th Dec.	do	20	...	12	3	11	38th Regt. N. I. ...	Secunderabad.
	AlexanderAdam Renton ...	7-9-5-12	20th Jan. 1851	do		...	12	2	11	.....	Europe s. c.
	*John Anderson Cox ...	7-4	10th Feb.	do		...	12	1	18	23rd Regt. L. I. ...	Trichinopoly.
	*James Edward Dickinson ...	4-11	10th Sept.	do		...	11	6	20	10th Regt. N. I. ...	Jubbulpur.
100	*Colvin Smith ...	7-5	3rd Nov.	do		...	11	4	27	Medical Officer. ...	Coonoor.
	*Edward D'Arcy Evezard ...	4	27th Jany. 1852	do		...	11	2	5	42nd Regt. N. I. ...	Masulipatam.
	*Francis Day ...	4-†††	26th Feb.	do		..	11	1	3	Civil Surgeon ...	Cochin.
	Charles Lee ..	4	11th Sept.	do		...	10	6	19	35th Regt. N. I. ...	Bellary.
	*Howard B. Montgomery ...	7-6-†-3-8	20th Oct.	do		...	10	5	10	Gar. Asst. Surg. Fort St. George, & Ag. Sur. 2d Dis.	Kilpauk.
105	Joseph Marcus Joseph ...	7-9-10-4	20th Nov.	do		...	10	4	10	Civil Surgeon ..	Tranquebar.
	Edward Somerset Cleveland....	7-4-11	do	do	30	...	10	4	10	Offig. Gar. Asst. Surg. ...	Bangalore.
	William Henry Harris ...	4-11	13th Feb. 1853	do		...	10	1	0	43rd Regt. N. I. ...	Cuttack.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	No. in Rank.	Nominal Service to 31st March 1863. Y.	M.	D.	Corps or Department.	Station.
	*William Henry Rean ...	7-4	14th May 1853	32 ...	9	10	27	37th Regt. Grenadiers ...	Vizianagarum.
	Henry Thompson Shaw ...	4	10th Sept.	...	9	6	20	Jr. Staff Assist. Surg. ..	Palaveram.
110	*Alfred Sanderson ...	7-4	20th Oct.	...	9	5	10	1st Regt. Infy. Hyd. Contingent. ...	Bolarum.
	Clarence Cooper ...	7-14-2-11	20th Nov.	...	9	4	10	Arty. & Details. ...	Labuan.
	James McDonald ...	5-12	14th Feb. 1854	...	9	1	14	Zillah Surgeon ...	Rajahmundry.
	*Samuel Jardine Wyndowe ...	4-7	24th March	...	9	0	7	Civil Surgeon Malabar, d.d. 44th Regt. N. I. ...	Madras.
	William Robert Cornish ...	4-12	1st April	...	9	0	0	Secretary to Prin. Inspr. Genl. Med. Dept. ...	Madras.
115	John Simm Morton ...	7-5	10th June	...	8	9	20	B Battery 3rd Rl. H. A....	Secunderabad.
	Arden Hulme Beaman ...	4	do	46 ...	8	9	20	....	
	John Pearson Nash ...	7-4-12	20th do	...	8	9	10	15th Regt. N. I. ...	Trichinopoly.
	*Henry Critchley Brodrick ...	7-4-11	2nd Sept.	...	8	6	28	Residency Surgeon ...	Indore.
	George Stewart Watson Ogg ...	8-5-††	12th do	...	8	6	18	Zillah Surgeon ...	Coimbatore.
120	John Shortt ...	7-4-12	20th do	...	8	6	10	Civil Surgeon ...	Chingleput.
	Donald Coleman McAllum ...	7-5-12	30th Dec.	...	7	6	2	Durbar Surgeon ...	Hyderabad.
	William Nathan Chipperfield...	4-11	3rd Jan. 1855	..	8	2	28	Prof. Med. College., Actg. Gar. Asst. Surg. ...	Fort St. George.
	William Pearl ...	4-11	24th do	...	8	2	8	Arty. Horse & Foot ...	Bellary.
	George Marr ...	7-5	do	...	8	2	8	Civil Surgeon ...	Moulmein.
125	*William Doyle ...	3-10	do	...	8	2	8	Zillah Surgeon ...	Combaconum.
	Edmund Eyre Lloyd ...	4	do	50 ...	8	2	8	Civil Surgeon ...	Cocanada.
	*Thomas Lowe ...	4-11-12	do	...	8	2	8	Sappers and Miners ...	Dowlaishwarum.
	*Henry Webster ...	4-11-12	do	...	8	2	8	....	Europe s. c.
	James Augustus Foy	4-12	do	...	8	2	8	Dept. of Dy. Inspr. Genl. of Hospls. N. Divn. ...	Vizagapatam.
130	*Michael Cudmore Furnell ...	4	7th Feb.	...	8	1	21	Zillah Surgeon ...	Tellicherry.
	*George Alexander Burn ..	7-5-12	30th May.	..	7	10	2	3rd Cavalry Hyd. Cont. ...	Europe s. c.

	Thomas Graduate	...	4-11	4th Aug.			...	7	7	27	Civil Surgeon	... Guntoor.
	Henry Jos. Herschel Griesbach.		7-4-12-11	do			...	7	7	27	d.d. 9th Regt. N.I.	... Moulmein.
	Benjamin Hooke	...	4	do			...	7	7	27	.....	... Europe s. c.
135	Robert Dempster	...	4-12	do			...	7	7	25	39th Regt. N.I.	... Palamcottah.
	John Houston	...	7-5	do		60	...	7	7	25	Acting Durbar Surgeon	... Mysore. [*S.C.*
	*Henry Elmsley Busteed	...	4	do			...	7	7	27	Civil Surgeon	... Cuddalore. *Eur.*
	Henry Crocker	...	7-12-4	do			...	7	7	27	4th Infy. Hyd. Cont.	... Lingasagoor.
	Richard Arnold	...	4-11	do			...	7	7	27	26th Regt. N. I.	... Kamptee.
140	*Hunter Adam	...	5	do			...	7	7	27	Zillah Surgeon	... Nellore.
	*William Henry Morgan	...	4*	do			...	7	7	27	17th Regt. N. I.	... Quilon.
	Josiah Dashwood Gillies	...	7-4-12	7th Nov.			...	7	4	23	Zillah Surgeon	... Tinnevelly.
	Dugald Campbell	...	7-5-12	21st do			...	7	4	9	F Troop H. B. Arty	... Bangalore.
	Henry King	...	†-8-12	11th Jan.	1856		...	7	2	20	Civil Asst. Surg.	... Baitool. *Eur. S. C.*
145	Benjamin Williamson	...	8-5	28th do			...	7	2	2	2d Cavalry Hyd. Cont.	... Hingolee.
	James Thomas Fraser	...	8-4-11	20th Feb.		70	...	7	1	18	Civil Surgeon.	... Malacca.
	*George Bidie	...	8-4-12	do			...	7	1	18	Cattle Farm	... Hoonsoor.
	John Groscort Reed	...	7-4	do			...	7	1	18	3rd Cavalry Hyd. Cont.	... Mominabad.
	John Henderson	...	7	do			...	7	1	18	33rd Regt. N. I.	... Bangalore.
150	Hamilton McEilheron Ross	...	7-4-12	do			...	7	1	18	Resy. Surgeon, *Actg.* Phys.	.. Travancore.
	Charles Thick Eves	...	4-11	do			...	7	1	18	Hyd. Contingent.	... Aurungabad.
	James Sadlier Ridings	...	4	do			...	7	1	18	.....	..... Europe s. c.
	James Joseph Heffernan	...	6	do			...	7	1	18	d. d. 11th Regt. N. I.	... Berhampore.
	David William Trimnell	...	4-11	do			...	7	1	18	Civil Surgeon	... Nursingpoor.
155	Charles Abdy Andrews	...	4	25th April			...	6	11	6	Zillah Surgeon	... Vizagapatam.
	John McNeale Donnelly	...	7	3rd July		80	...	6	8	28	Civil Surgeon	... Mergui.
	James Keess	...	8-10-4-12	4th Aug.			...	6	7	27	Civil Surgeon	... Kurnool.
	*Robert Wilson	...	7-13-11	do			...	6	7	27	Civil Surgeon	... Madura.
	Robert William Cockerill	...	4-12-11	do			...	6	7	27	Zillah Surgeon.	... Chicacole.
160	*Charles Robertson	...	7	do			...	6	7	27	Zillah Surgeon	... Masulipatam.
	*William Charles Elliot	...	7-5	do			...	6	7	27	7th Regt. N. I.	... Kamptee.
	Alexander Gamach	...	7-5	do			...	6	7	27	Port Blair.	.. Andamans.
	Jacob Wilkins	...	7-4	do			...	6	7	27	28th Regt. N. I.	... Rangoon.
	*Thomas Gwynne Howell	...	4	12th Nov.			...	6	4	18	13th Regt. N. I.	Eur. *on duty.*
165	*James Ross	...	8-5	29th Jan.	1857		...	6	2	3	Acting Zillah Surgeon.	... Tanjore.
	*Samuel Thomas Heard	..	7-5-12	do		90	...	6	2	3	A Bat. 3d Rl. H. Brig.	... Kamptee.
	*William Arnold Smith	...	7-4	do			...	6	2	3	36th. Regt. N. I.	... Kurnool.

* Graduate Calcutta Medical College.

List of Medical Officers of Her Majesty's Indian Forces—*(Continued.)*

No.	Names.	Professional Titles.	Date of Rank as Asst. Surgeon.	No. in Rank.	Nominal Service to 31st March 1863. Y.	M.	D.	Corps or Department.	Station.
	*William Frederick deFabeck...	4	29th Jany. 1857	92 ...	6	2	3	Actg. Civil Surgeon ...	Chittoor.
	*George Edward Whitton ...	8-6-12-†	do	...	6	2	3	C. Bat. 3d H. Brg. ...	Bangalore.
170	*Thomas Beaumont ...	7-6	do	...	6	2	3	Med. charge 3d Corps C. I. Horse ...	Goonah.
	*William Pierce Kelly ...	6	9th June	...	5	9	21	3rd Regt. P. L. I. ...	Tonghoo.
	William Richard Grylls ...	7-4-12	4th Aug.	...	5	7	27	Dist. of Chindwarrah ...	Nagpore.
	*James Thomas Joseph Doyle..	3	10th Dec.	...	5	3	21	Zillah Surgeon. ...	Cuddapah.
	Henry John Beach ...	4-11	27th Jan. 1858	...	5	2	5	District of Chandah. ...	Nagpore.
175	*John Massey Miller ...	5-7	13th April	...	4	11	17	Kistna Anicut Est. ...	Europe s. c.
	William Farquhar ...	7-5	28th May	100 ...	4	10	4	d. d. 20th Regt. N. I. ...	Penang.
	*John Law ...	7-4-11	do	...	4	10	4	Bhundara District. ...	Nagpore.
	George Hamilton Alexander ...	7-5-12	do	...	4	10	4	.....	Europe s. c.
	Walter Fry ...	4	29th June	...	4	9	1	d. d. Dept. of Depy. Insp. Genl. of Hosls.	Southern Divn.
180	William John Busteed ...	5-12	23rd July	...	4	8	9	Department of Deputy Inspector General of Hospitals Southern Divn.	Trichinopoly.
	William Farquhar Davis ...	7-4-12-11	23rd June	...	4	8	9	17th Brig. Rl. Arty. ...	St. Thomas' Mt.
	Samuel Rule ...	7-4	do	...	4	8	9	Zillah Surgeon ...	Mangalore.
	James McDonald Houston ...	7-4	do	...	4	8	9	Medical Charge Engineer Dept. ...	Upper Godavery.
	William Rowland Roberts ...	7-14	do	...	4	8	9	Dt. of Dy. Is. Gl. N. Force.	Under the Govt. N. W. P.
185	John Murray ...	7-5-12	do	...	4	8	9	.....	Europe s. c.
	John Bilderbeck ...	15-4-12	10th Feb. 1859	110 ...	4	1	18	No. 3 Bt. 17th Brig. Rl. Ay.	Cannanore.
	Peter William Marriott ...	4-11	do	...	4	1	18	.....	Europe s. c.
	Robert Edmund Pearse ...	4	do	...	4	1	18	d. d. Dett. H. M's. 102nd Regt. of Foot. ..	Calicut.
	George Dalziel Riddell ...	5	do	..	4	1	18	5th Infantry Hyd. Cont....	

190	Æneas McLeod Ross ...	5	do		...	4	1	18	Zillah Surgeon ...	Honore.
	Joseph Dougall ...	5-12	do		...	4	1	18	No. 2 Bt. 20th Bg. Rl. Aty.	Waltair.
	Benjamin Thomas Suffrein ...	4-12-11	27th July		...	3	8	5	Civil Surgeon. ...	Tonghoo.
	Joseph Francis Barter ...	5-12	do		...	3	8	5	Dt. Sappers & Miners. ...	Muttoor Hill.
	John FitzGerald ...	6	do		...	3	8	5	d. d. 20th Brig. Rl. Arty...	Penang.
195	Andrew Fergusson ...	7-5	do		...	3	8	5	d. d. No. 1 Bt. 17th Bg. Rl. Ay. & D Co. Golundauze.	Singapore.
	Hugh Griffith ...	4-12-11	do	120	...	3	8	5	D. of Dy. Is. Gl. Pegue Dn.	Rangoon.
	Francis Thomas Bayntun ...	4	26th Oct.		...	3	5	6	H. M. 102d Regt. of Foot.	Bangalore.
	George Williamson ...	7-5	20th Jany. 1860		...	3	2	12	H. M. 108th Regt of Foot	Bolarum.
	Charles Robert Geo. Parker ...		do		...	3	2	12	H. M. 102d Rt. Ft. R. M. F.	Cannanore.
200	Hugh Ronaldson Handyside ...		do		...	3	2	12	d. d. 15th Regt. F.R.M.F..	Europe s. c.
	Daniel Kearney ...		do		...	3	2	12	Civil Med. charge Station.	Shoay Gheen.
	Francis Orde Bigg Wither ...	4-11	25th do		...	3	2	6	d. d. No. 2 Battery 23rd Brig. Royal Arty. ...	Jaulnah.
203	Frederick Duckworth ...	7	1st Oct. 1861	127	...	3	6	0	23rd Brig. Royal Arty. ...	Secunderabad.

39 VACANCIES.

Local Assistant Surgeons.

1	Samuel Mason ...	28th Aug 1858	...	.....	Res. Med Officer Lun. Asy.	Madras.
	Arthur Harris ...	24th July 1862	...	.....	d d Gar. of Trichinopoly...	Trichinopoly.
3	George Dewsnap ..	7th Feby. 1863	...	.....	Garrison of Fort St. George	--

List of Medical Officers of Her Majetsy's British Forces.

No.	Names.	Professional Titles.	Date of Commission. Regimental.	Date of Commission. Army.	Service to 31st March 1863.	Corps or Department.	Station.
	Deputy Inspector General of H. M. Hospitals.						
1	George S. Beatson	M.D	.....	31st Dec. 1858	.....	.....	Bangalore Hd. Qs.
	Staff and Regimental Surgeons.						
	Charles Bush Hearn	.....	15th April 1862	.....	.....	1st Royal Regt.	Kamptee.
	Thomas Best	.....	22nd do	13th April 1852	.....	68th do	Rangoon.
	Huntly George Gordon†	M.D.	31st Dec. 1861	.....	.....	69th do	Fort St. George.
5	James Macbeth†	M.D.	3rd do	.....	.....	74th Highlanders	Bellary.
	William Holmes Jephson	M.D.	29th June 1855	12th Jan. 1855	.....	1st Drag. Guards	Bangalore.
	J. A. Fraser	M.D.	22nd Oct. 1861	.....	.....	18th Royal Irish	Secunderabad.
	G. Waterloo Pennington Sparrow	.....	6th July 2855	.....	.....	60th Rifles	In Med. charge Wellington.
	James Kellie	M.D.	2nd Oct. 1857	.....	.....	17th Lancers	Secunderabad.
10	William Sim Murray	M.B.	24th June 1859	.....	.....	66th Regiment	Bangalore.
	R. E. Fitzgibbon	.....	.....	.....	.....	Depot Surgeon	Poonamallee.
	Staff and Regimental Assistant Surgeons.						
	David Cullen	M.D.	13th Nov. 1860	1st Sept. 1854	.....	17th Lancers	Secunderabad.
	John Wild Hulseberg	.....	14th Dec. 1854	.....	.....	1st Royal Regiment	Kamptee.
	Joseph Watts	....	23rd Nov. 1860	5th April 1855	.....	1st Drag. Guards	Bangalore.
15	Samuel Fuller	.....	12th Oct.	23rd July	.....	17th Lancers	Secunderabad
	Clement Williams	.....	5th Jany 1855	.....	.....	68th Regiment	Agent to the C. Commr. of British Burmah at Mandalay.

	William Robert Burkitt ...	.....	17th April	.....	.....	74th Highlanders ...	In Med. charge at Ramandroog.
	Edward L. McSheehy ...	M.D ...	14th Aug. 1857	27th May 1857	.....	1st Dragoon Guards.. ...	On leave to Europe M. C.
	Francis Madden ...	.....	13th July. 1858	19th Oct.	.....	69th Regiment ...	Fort St. George.
20	John Henderson Whittaker. ...	.....	6th Nov. 1857	30th do	.....	69th Regiment ...	Wellington.
	Frederick Ffolliott ...	.....	1st Aug.	.....	.....	18th Royal Irish ...	Secunderabad—absent on duty.
	Augustus Oliver Applin ...	.....	3rd Oct.	.....	.....	68th Regiment ...	Rangoon.
	Robert Gillespie ...	M.D ...	31st Dec. 1858	1st Sept. 1858	.....	74th Highlanders ...	Bellary.
	Matthew Lawrence White ...	.....	1st June 1859	22nd do	.....	1st Royal Regt. ...	Kamptee.
25	James M'Creevey ...	M.D ...	31st Dec. 1858	22nd Jany.	.....	66th Regiment ...	Bangalore.
	Alexander C. McTavish ...	.....	29th July 1862	12th do 1859	.....	60th Rifles ...	Thayetmyo.
	C. Codrington ...	.....	28th Oct. 1860	13th June.	.....	68th Regiment ...	Rangoon.
	George Alexander Moorhead	.....	5th Aug. 1859	.....	.....	66th do ...	Bangalore.
	William Orr ...	.....	4th do 1860	.....	.....	18th Royal Irish ..	Secunderabad.
30	R. O. Hayden ...	.....	15th Sept. 1859	.....	.....	60th Rifles ...	Thyetmyo.
	F. W. Wade ...	.....	28th do	.....	.....	do ...	do
	N. Avent ...	.....	9th April 1861	.....	.....	66th Regiment ...	Bangalore.
	J. A. Fitz Patrick ...	.....	2nd Dec. 1862	1st April 1861	.....	1st Royal Regt. ...	Kamptee.
	H. A. Coghlan ...	.....	1st Mar. 1859	.....	.....	18th Royal Irish ...	Secunderabad.
35	W. O'Hallaran ...	.....	18th Feby. 1862	.....	.....	74th Highlanders ...	Bellary.
	G. Simon ...	.....	.....	.....	.....	60th Rifles ...	Thayetmyo.
37	T. C. Morgan ...	.....	.....	.....	.....	1st Dragoon Guards ...	Bangalore.

List of Veterinary Officers of Her Majesty's Indian Forces.

No.	Names.	Date of Commission.	Corps or Stations.	Remarks.
	SURGEONS, 10.			
1	Ed. Boghurst Dawson...	28 June 1845	Staff Veterinary Sg. 1st Lt. Cavalry...	Australia s. c.
	Joshia M. Cullimore ...	7 August 1848	d. d. Rl. Arty. ...	Nagpore Force.
	*Thomas Aston ...	4 Dec.	.....	Europe s. c.
	Rowland Hill Usherwood Holloway ...	26 do. 1850	2d Light Cavalry..	
5	James Thacker ...	29 do.	Horse Artillery.....	
	Thomas Pritchard ...	2 Oct.	Body Guard. ...	Madras.
	Daniel Cullimore ...	27 Dec. 1853	3rd Lt. Cavalry.....	Europe s. c.
	Frederick George Shaw.	6 Feb. 1857	Rt. Depôt Oossoor..	
	George Western	25 April.	4th Light Cavalry..	
10	——			

Veterinary Officers of Her Majesty's British Forces.

1	F. Delany	5th Sept. 1844	1st Drgn. Guards.	Bangalore.
2	James Lambert ...	12th Oct. 1857	17th Lancers ...	Secunderabad.

Native Surgeons.

No.	Names.	Date of Rank.	Stations, &c.
1	C. Bauloo Moodelly ...	16 April 1852	Zillah of Trichinopoly.
	S. Jesudasen Pillay ...	do	Black Town—Madras. Municipal Commissioner.
	S. B. Kanagaroyen ...	20 May 1856	Pullachy Civil Dispensary.
	P. S. Mootoosawmy Moodlr...	do	Zillah of Combaconum.
5	Moodeen Sheriff ...	5 do 1858	Civil Dispensary, Triplicane.
	M. Iyasawmy Pillay ...	do	do Cuddapah.
	I. Raujantheram ...	do	do Cuddalore.
	T. Ruthnum Modelliar ...	do	do Nellore.
	Y. Anthony Pillay ...	do	do Madura.
10	R. N. Manikum ...	12 do 1859	do Salem.

Sub-Assistant Surgeons.

1	John Alcock, Actg. ...	15 Oct. 1861	Pegu Sapper Battalion.
	D. R. Thompson, M.D. ...	23rd May, 1862	3rd Class Supt. of Vaccination, Presidency.
3	S. Pulney Andy, M.D. ...	do	Actg. do Malabar.

List of Medical Warrant Officers of H. M.'s Indian Forces.

No.		Names.	Date of Rank.	Stations, &c.
		Sr. APOTHECARIES.	Apothecary.	
1		Arthur Harris ...	4 Feb. 1831	d. d. Gar. of Trichinopoly.--Has the Local Rank of Asst. Surgn.
		George Haldwell ...	2 June 1832	Garrison of Bangalore.
		Samuel Mason ...	27 August 1833	Resident Medical Officer of the Lunatic Asylum.—Has the Hon. Rank of Asst. Surg., with its relative Rank of Lieut.
		Henry Xavier‡ ...	19 June 1836	Under the Comssr. in Mysore.
5	*P. A.*	Mark Sterling‡ ...	7 Feb. 1840	Port and Marine Surgeon's Dept.
	do	George Dewsnap‡	15 May 1857	Garrison of Fort St. George.—Has the Hon. Rank of Assistant Surgeon, with its relative Rank of Lieutenant.
		APOTHECARIES, 40.		
	P. A.	David Scot Turner ...	2 Sept 1842	Garrison of Vizagapatam.
	do	*Gustin Wilson ...	1 Nov.	Secunderabad.
	do	Thomas Good ...	6 Feb. 1844	Attached to the Commissioner, Tenasserim Provinces.
10	*do*	*George Smith ...	27 May 1845	Garrison of Cannanore.
	do	Bartholomew Woutersz	24 Feb. 1848	Under the Comssr. in Mysore.
	do	Amond Doutre ...	24 Sept.	General Hospital, Presidency.
	do	John Mathews ...	12 June 1849	Under the Colr. & Mag. Chingle-
	do	Robert Thompson ...	15 March 1850	Bangalore & Madras 3 months [put.
15	*do*	Thomas King ...	24 Dec.	Under the Comssr. in Nagpore.
	do	Joseph North ...	25 July 1851	Garrison of Bellary.
	do	Henry William King...	1 Nov.	Medical Stores, Presidency.
	do	*Peter McIntyre ...	9 May 1854	Dept. of Depy. Inspector General of Hospitals, Malabar & Canara, Med. ch. Lt. and Zillah of Tellicherry.
	do	T. M. Francke ...	21 Nov.	Cantonment of Kamptee.
20	*do*	William Barnes ...	22 May 1855	Mysore Commission.
	do	Samuel Jones ...	15 June	Penitentiary, Madras.
	do	*Robert Huffton ...	28 Nov.	Doing duty Female Asylum.
	do	John Alcock ...	15 July 1856	A g. Sub. Ast. Sg., Pegue Sap. Bat.
	do	*John Charlesworth ...	21 Oct.	Civil Establishment, Sircy.
25	*do*	George Wrightman ...	17 do	Under the Comssr. Mysore.
	do	John Aitkins ...	July 1857	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	do	John William Clark ...	27 April 1858	Doing duty Lunatic Asylum.
	do	Abel Grove ...	do	Native Infirmary.
	do	George Macqueen ...	.....	Dept. of Depy. Insp. Genl. of Hospls. Nagpore Force.
30	*do*	John Cunningham ...	29 March	d. d. Government House.
	do	Joseph Swaris ...	16 Sept.	d. d. Dept. Depy. Inspr. Genl. of Hospls, N. Divn.—doing duty Masulipatam.

P. A. Signifies passed examination as Apothecary.

‡ Senior Apothecaries in receipt of higher allowances.

List of Medical Warrant Officers of H. M.'s Indian Forces.—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	APOTHECARIES.		
	P. A. Christopher Oliver ...	12 Oct. 1853	Dept. of Depy. Inspr. Genl. of Hospls. Prsy. Divn. Cannanore and Madras leave 6 Mos. from 1st Dec. 1861.
	do John Davall ...	14 Feb. 1860	d. d. Dept. of Depy. Inspr. Genl. of Hopls. Mysore Division.
	do *John Tyrrell ...	27 July	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Presy.
35	*do* *Archibald Spiers ...	31 August	d. d. Civil Dspy., Raneepet, Arcot.
	do J. F. Rodgers ...	19 Dec.	d. d. Dept. of Dy. Inspr. Gl. of Hospls. N. Divn. E. Coast and Neilgherries s.c.
	do Charles Evers ...	16 April 1861	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Southern Divn.
	do Richard Quintin ...	16 do	Dept. of Depy. Inspr. Genl. of Hospls., Nagpore Force.
	do Thomas B. Turnbull...	23 do	Eye Infirmary.
40	*do* Charles Doig. ...	25 August 1857	d. d. Dept. of Dy. Insp. Genl. of Hosp. Hyd. S. Force.
	do George Honor ...	21 Mar. 1862	H. M. 1st Dragoon Guards.
	do *Henry C. Clarke ...	6 May	d. d. Seamen's Hospl. and Civil Dispy. Cocanada.
	do Frederick Pearl ...	27 do	Bolarum and Secunderabad 3 months. Hyd. Sub. Force.
	do George Pereira ...	8 Aug.	Trimalgherry Hosl. Secunderabad.
45	*do* Joseph Miller ...	15 do	H. M.'s 1st Royal Regt. of Foot.
46	Daniel Gillespie† ...	20 do 1859	Dt. of Dy. Inspr. Genl. of Hospls. Hyderabad Suby. Force.—Belgaum s. c.
	2ND APOTHECARIES, 30.		
1	*P. A.* Thomas Horrox ...	16 Oct. 1857	Ganjam Survey.
	*Edmond White ...	do	H. M. 1st Royal Regt. of Foot.
	do John Lloyd ...	do	Collector's Establishment, Salem.
	do *James White ...	do	d. d. Arty. at Rangoon.
5	William Miles ...	do	H. M. 18th Royal Regt.
	do Thomas Leonard ...	do	Ganjam Survey Party.
	do Samuel Newnan ...	do	d. d. Genl. Hospl. Presy.—Arcot and Shervaroy Hills, s. c.
	do John Gorman ...	do	Lying-in-Hospital, Madras.
	do William Leach ...	do	H. M. 68th Regiment of Foot.
10	*P. S. A.* Wm. K. Kierulf ...	27 April 1858	20th Brigade Royal Artillery.
	P. A. Henry H. Lynsdale...	do	Kotagherry. [derabad.
	P. S. A. Patrick J. Finley ...	9 July	H. M. 23rd Brig. Rl. Ary. Secun-
	do Lazarus Dyce ...	31 Dec.	H. M. 74th (Highlanders) Regt. of Foot.
	do Francis Meneaud ...	25 Feb. 1859	H.M. 102d Regt. of Foot Royal Madras Fusiliers.

P. A. Signifies passed examination as Apothecary.

P. S. A. Signifies passed examination as Second Apothecary.

† Supernumeraries.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	2ND APOTHECARIES.		
15	*P. S. A.* James West ...	29 March 1859	H. M. 66th Regiment.
	do *George Drake ..	27 Sept. 1861	H. M.'s 105th Regt. of Foot.
	do *James Hargreaves...	13 August	Station Hospital, Malacca.
	do *William Powell ...	29 October	H. M.'s 17th Lancers.
	do Wm. Douglas Master	21 March 1862	d. d. Dept. of Dy. Inspr. Genl. of Hospitals, Northern Division.
20	*do* *Daniel Henry Gray.	6 May	d. d. H. M. 18th Regt. of Foot.
	do Henry Wale ...	13 do	H. M. 69th Regt. of Foot.
	do Henry Callaghan ...	27 do	H. M's. 1st Dragoon Guards.
	do *R. F. Stephenson ...	27 June	H. M. 17th Brig. Royal Artillery.
	do *Francis B. Pereira...	27 do	Mysore Commission.
25	*do* John Middleton ...	18 July	To do duty Collr.'s Est., Bellary
	do *John Asiaticus Hill Wahab ...	8 Aug.	Dept. of Depy. Inspr. Genl. of Hospitals, Nagpore Force.
	do T. Humphreys Carr..	15 do	In charge of the Civil Station and Dispy. at Raepore.
	*Samuel B. Kemp¶...	16 Oct. 1857	Dept. of Depy. Inspr. Genl. of Hospls. Ceded Districts.
	Patrick Heron† ...	17 June	H. M. 60th Regt. Rifles.
30	John Edwin Ross†...	12 Oct.	Depôt of Poonamallee.
	ASST. APOTHECARIES, 197		
1	*P. S. A.* *Alphonso White ...	2 Feb. 1848	Madras and Bangalore, 2 months.
	do *Thomas Richard Peck	do	Lunatic Asylum.
	do John W. McKenzie...	do	H. M. 108th Regt. of Foot.
	do W. T. Chillingsworth.	28 March	Dept. of Depy. Inspr. Genl. of Hospls. Southern Division.
5	*do* James Thomas ...	18 August	Dept. of Depy. Inspr. General of Hospitals, M. Division.
	do Abraham Saviel ...	24 Sept.	Doing duty at Tanjore.
	do *John Joseph Wood.	2 Oct.	Assistant to Professor of Botany. and Materia Medica in the Med. College.
	do Henry Hitchock ...	11 do	Cochin.
	do *Robert Donaldson...	26 Dec.	d. d. Pensioners, Cuddalore.
10	Samuel Sausman ...	6 March 1849	Asst. to Civil Surgeon Moulmein.
	do Joseph O'Keeffe ...	3 May	H. M. 20th Brigade R. A.—Madras and Bangalore, s. c.
	do Henry Godbier ...	12 June	Medl. Stores, Presidency.
	do James Lears ...	14 Sept.	d. d. Sebundies at Palcondah.
	do John Bornshin ...	8 Jany. 1850	4th Regiment N .I., Cuddalore, 3 months.
15	*do* George A. Trutwein..	15 March	Mysore Commission.
	do J. Alexander Beckett.	26 do	d. d. Garrison of Vellore.
	do *Samuel Hall ...	2 July	Mysore Commission.

P. S. A. Signifies passed examination as Second Apothecary.

¶ Under orders of the Supreme Govt. for employment with European Corps in Bengal.

† Supernumeraries.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	NAMES.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	*Austin Ince ...	29 July 1850	A Battery Horse Artillery.
	*Michael Netscher ...	6 August	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
20	*P. A.* *Laurence Carthy ...	9 Sept.	Andaman Islands, with local rank of 2nd Apothecary.
	*David Stewart ...	27 do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts.
	George Bamford ...	24 Dec.	Dispensary 2nd District.
	George Nicholls ...	22 May	Garrison of Bellary.
	*Thomas Quinn ...	25 July	Garrison of Vizagapatam.
25	Robert Alexander Leonard ...	14 Nov.	H. M. 68th Regiment of Foot.
	Henry O'Flaherty ...	5 June 1852	Andaman Islands, with local rank of 2nd Apothecary.
	Charles James Daly ...	do	B. Troop Horse Arty. Sea Coast s.c.
	Richard Wilkins ...	do	Demonstrator of Anatomy and Curator of the Museum at the Medical College.
	*Henry Hackett ...	29 do	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Divn. Burmah Proper 12 months.
30	Peter Anderson ...	21 August	d. d. Ramandroog.
	*J. Howard, M. D. & M. R. C. S., [Eng.]...	27 do	Md. charge of the Zillah of Ganjam
	*John Sausman ...	do	Dt. of Dy. Inspr. Genl. of Hos. Sn. Division, d. d. at Paumbem.
	*William Thomas ...	1 Oct.	Do. do. Nagpore Force.
	Charles Smith ...	10 Dec.	d. d. Artillery, at Thayetmyoo.
35	John Ringrow ...	17 do	Andaman Islands, with local rank of 2nd Apothecary.
	Thomas Joseph Riely ...	do	Doing duty Dept. of Dy. Inspr. Genl. of Hospitals, Hyderabad Subsidiary Force.
	John Wayne ...	31 May 1853	Dept. of Deputy Inspr. Genl. of Hospitals, Mysore Division.
	William Osman ...	7 July	Native Infy. Depôt, Palaveram.
	Charles Pettigrew ...	do	Mysore Commission.
40	James Karney ...	do	Garrison of Trichinopoly.
	Samuel Wells, M. D. ...	3 May 1854	Oosoor.
	Daniel Truth O'Keeffe ...	do	Artillery at Penang.
	*George Frederick Carpenter..	do	d. d. Dt. of Dy In. Gl. of Hos. H. S. F.
	Patrick Kinsley ...	do	Male Asylum, Madras.
45	George Watson ...	do	Mysore Commission.
	Joseph Hackett ...	do	Pauper Hospital, Singapore.
	Walter Hugh Yarde ...	9 do	Under the orders of the Officer Comg. Pegue Dn. at Menghie.
	John Walker ...	30 do	H. M. 74th Highlanders.
	Robert Harvey ...	28 April 1855	Asst. to the Professor of Chemistry in the Med. College, Madras.
50	Caleb St. John Lawrence ...	do	Garrison of Cannanore.
	Thomas George Eade ...	do	Province Wellesley.

P. A. Signifies passed examination as Apothecary.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	John James Henry Everard ...	28 April 1855	Cantonment of Secunderabad.
	George Christopher Brown ...	do	Kimedy.
	Francis Henry Horatio Smith.	do	Medical Stores, Presidency.
55	Miles Craggs ...	do	Cantonment of Kamptee.
	Fred. Agtus. Adolphus Vint...	do	No. 7 Horse Field Battery.
	Robert Stewart ...	10 July	Convalescent Depôt, Wellington.
	Edward Samuel Mayley ...	28 do	Dt. of Dy. Ins. Gl. of Hos. N. Dn.
	Joseph Victor Duckworth ...	21 May 1856	Dt. of Dy. Inspr. Gl. of Hospls., Hyderabad Sub. Force.
60	John J. Leonard Wheatley ...	do	At the disposal of His Honor the Govr. Straits Settlement.
	Anthony Lawrence Xavier ...	do	Andaman Islands, with local rank of 2nd Apothecary.
	Charles D'Santos ...	do	General Hospital, Madras.
	John Hardaker ...	do	Dept. of Depy. Inspr. General of Hosls., N. Div. d. d. G. S. Party.
	Paul George Paul ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Northern Division.
65	John Edward Lillywhite ...	do	Under the Straits Government.
	Thomas Cripps ...	do	H. M. 17th Lancers.
	John Green ...	5 do 1857	H. M. 1st (Royal) Regt. of Foot.
	William Karney ...	do	d. d. Sappers and Miners.
	Henry Stagges ...	do	Dt. of Depy. Insp. Gl. of Hospls., Pegue Div. d. d R. A. Tonghoo.
70	Thomas Ward ...	do	17th Regiment Native Infantry.
	George Wilkie ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Pegue Division.
	Robert Henry Legge ...	do 1856	d. d. Dept. of Dy. Inspr. Genl. of Hospitals H. S. Force.
	Easton Alfred Morris ...	do 1857	Dept. of Depy. Inspr. General of Hospitals, Ceded Districts. d. d. Northern Division.
	Henry Joseph Scott ...	do	H. M. 23rd Brgd. Royal Artillery Secunderabad.
75	Samuel Johnston ...	do	Body Guard.
	Leonard Walter Lincoln ...	do	Dt. of Depy. Inspr. Gl. of Hospl. Southern Division.
	*John Sausman ...	16 do	Under the Straits Government.
	James Joseph O'Flynn ...	do	25th Regiment N. I.
	Henry Boon ...	do	H. M.'s 69th Regt. of Foot.
80	James Albert Falloon ...	16 May	12th Regt. N. I.
	James Walker ...	do	d. d. Details at Kamptee.
	*William Hamilton ..	3 August	Doing duty Dept. of Dy. Inspr. Genl. of Hos., Pegue Division.
	William Gilbert Wright ...	do	7th Regiment N. I.
	William Joseph Gray ...	do	2nd Regiment L. C.
85	Edmond O. Claudius Vint ...	do	Dept. of Depy. Inspr. Genl. of Hospitals, Ceded Districts—Madras and Bangalore, 4 months.
	James McFarland ...	do	Dept. of Dy. Insp. Genl. of Hospitals Mysore Divn.

List of Medical Warrant Officers of H. M.'s Indian Forces—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	*John Robert Carey ...	3 August 1857	Doing duty Tambacherry Pass.
	Thomas Everard ...	do	B Battery, 3rd Rl. Horse Brigade.
	*Thomas Gabriel Devine ...	do	Malabar and Canara.
90	Richard James Ramsbottom...	do	Dept. of Dy. Ipr. Gl. of Hospls. Mysore Division, Bellary s. c.
	James Hugh McClosky ...	do	Colonial Apothecary, Labuan.
	George Watson ...	do	Doing duty H. M. 105th Regt. of Foot.
	William Watson ...	do	H. M. 66th Regt. of Foot, Detachment Malliapooram. Bangalore s. c.
	John Felix James Borgonha...	do	Station Hospital, Singapore.
95	Edward James Heiden ...	do	d. d. Dept. of Depy. Inspr. Genl. of Hospitals, Northern Divn.
	James George Ashworth ...	do	Depôt of Poonamallee.
	Thomas Tudor Van Hams ...	do	33rd Regiment N.I.
	James Ringrow ...	25 do	Dt. of Dy. Inspr. Gl. of Hos. Malabar and Canara. Cannanore s. c.
	John Isacke ...	do	H. M. 17th Brigade Rl. Artillery.
100	Daniel Callaghan ...	1 October	d. d. 23rd Regiment L. I.
	John Norman ...	do	Dept. of Dy. Ins. Genl. of Hos. Pegue Divn.
	Edwin Atkinson ...	do	H. M. 17th Lancers.
	Alfred Wright ...	do	C Troop Royal Horse Artillery.
	James John Watts ...	do	Dt. of Dy. Ins. General. of Hos. Northern Division.
105	Benjamin Lewis Xavier ...	do	31st Regiment L. I.
	Thomas Kelly Hall ...	do	Dept. of Depy. Insp. Genl. of Hospls. Pegue Division.
	Charles Thipthorp ...	do	d. d. H. M. 20th Brig. Rl. Arty.
	Thomas V. S. Aitkins ...	do	D Batty. 3rd Rl. Horse Brigade.
	Francis Brown ...	19 Jany. 1858	d. d. Royal Arty. Secunderabad.
110	Alexander Trutwein ...	1 June	27th Regiment N. I. Madras and Vellore—2 months.
	Christian Thomas Browne ...	24 August	2nd Regiment N. I.
	George Marrow ...	do	Dept. of Depy. Inspr. Genl. of Hospls, Pegue Division.
	Thomas Edwin Judge ...	do	d. d. No. 2 Baty., 23rd Brig. Royal Artillery.
	James Wood ...	do	d. d. Dept. of Depy. Insp. Genl. of Hospitals, Nagpore Force.
115	James Henry Lincoln ...	do	40th Regt. N. I.
	*Charles William Baker ...	do	16th do
	Christian Michael Antonio ...	do	d. d. Dt. of Deputy Ispr. Gl. of of Hos. Presy.
	Richard Alexander Bowie ...	do	Medical Stores, Presidency.
	Reuben John Anderson ...	do	Dt. of Dy. Insp. Gl. of Hos. Mys. Dvn. d. d. Malabar and Canara.
120	Richard Wells ...	do	Doing duty 20th Regt. N. I.
	James Theodore Gilles ...	do	H. M's. 91st Regiment.
	Michael Wade ...	do	Eur. Arty. Vet. Co., Palaveram.

List of Medical Warrant Officers of H. M.'s Indian Forces.—*(Continued.)*

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	*George William Phillips ...	24 August 1858	Dt. of Dy. Inspr. Genl. of Hospls. Hyderabad Sub. Force, d. d. Batteries Royal Artillery.
	Jonas Isaac Laffrey ...	do	34th Regt. L. I.
125	George Edwin King ...	do	43rd Regiment N. I.
	William Day Stewart ...	9 Nov.	S. C.
	Edwin Gustavus Scott ...	24 Dec.	29th Regiment N. I.
	Francis D'Sylva ..	1 Feb. 1859	Detachment N. I. at Labuan.
	Jonathan Chadwick ...	do	41st Regiment N. I.
130	Thomas Baracliffe ..	20 April 1860	Collector's Dept. Vizagapatam.
	Theophilus Todd ...	5 May	3rd Regiment L. I.
	James Delany Jones ...	do	11th do N. I.
	Joseph Johnson ...	do	28th do
	John Edwin Xavier ...	do	d. d. Dept. of Deputy Insp. Gl. of Hospls. N. Divn. Madras s. c.
135	Edmund Trutwein ...	do	21st. Regt. N. I.
	Charles Trutwein ...	do	44th do
	Charles Jordon ...	do	d. d. 24th Regiment N. I.
	Stephen Chalke ...	do	d. d. H. M.'s 69th Regt. of Foot.
	John McDiarmid ...	do	32nd Regiment N. I.
140	James Anderson ...	do	9th do
	George John Duckworth ...	do	d. d. Dept. of Deputy Inspector General of Hospitals Ceded Districts.
	George Albert Watts ...	do	6th Regiment N. I.
	Richard Hamilton ...	do	Dt. of Depy. Inspr. Genl. of Hospitals, Hyd. Sub. Force.
	William Johnston ...	do	39th Regiment N. I.
145	Henry Wells ...	do	Pegue Police Battalion.
	David Arklie ...	29 June	1st Regiment N. I.
	Thos. Mergler ...	3 August	21st Regt. N. I.
	Edward Gillson ...	5 May	4th Regt. L. C.
	Jeremiah Trutwein ...	7 do 1861	Alguada Reef Double, and Cocos Island Light-houses.
150	Daniel O'Leary ...	do	30th Regiment N. I.
	John Bazely ...	do	14th do
	Albert Benjamin Court ...	do	15th do
	William Andrew Harrison ...	do	38th do
	Christopher D'Rose ...	do	37th Grenadiers.
155	William Henry Eade ...	4 June	3rd Regiment L. I.
	James Peter Robinson Thoy...	28 do	H. M.'s 18th Regt. Royal Irish.
	Frederick William S. Newland	16 July	Medical Stores, Presidency.
	Isaac McDermott ...	25 do	d. d. 8th Regiment N. I.
	Simeon Steinhoff ...	13 August	10th do
160	Samuel Edward Carrapeitt ...	do	13th do
	Francis Green ...	15 do	d. d. H. M.'s 17 th Brig. Rl. Arty.
	Colin Alfred Leary ...	26 do	19th Regiment N. I.
	Charles Robert Meneaud ...	1 Sept.	1st do L. C.
	Charles Samuel Aitkins ...	27 do	36th do N. I.
165	William Peter Oliver ...	29 Oct.	18th do
	Henry Hawkes ...	1 Nov.	d. d. N. Infy. Depôt, Palaveram.

List of Medical Warrant Officers of H. M.'s Indian Forces.

No.	Names.	Date of Rank.	Stations, &c.
	ASST. APOTHECARIES.		
	Henry Whitwell ...	27 June 1862	Under the orders of the Depy. Inspr. Genl. of Hospls., Presy.
	George Callaghan ...	18 July	33rd Regt. N. I.
169	Henry Smith ...	8 August	Depot Poonamalee.
170	Henry Tallent ...	15 do.	d. d. Garrison Fort St. George.
	PASSED MEDICAL APPRENTICES.		
1	Richard Stratheden Dawson...	25th April 1862	d. d. H. M.'s 68th Regiment.
	Cornelius Murphy ...	do	d. d. H. M.'s 74th Highlanders.
	Charles Nelson Cumberland Perry ...	do	d. d. Garrison of Vizagapatam.
	Thomas Dixon ...	do	d. d. H. M.'s 1st Dragoon Guards.
5	Samuel Beaver ...	do	d. d. H. M.'s 102nd Regt. Bangalore and Madras, s. c.
	John Holman ...	do	d. d. H. M.'s 69th Regiment.
7	Peter Wynne Reeves ...	do	d. d. 31st Regiment L. I.

List of Medical Subordinates who have received Medals from the Medical College.

Rank and Names.	When granted.	Remarks.
2nd APOTHECARIES.		
Lawrence Carthy	Session 1848-49	Johnstone Medal.
ASSISTANT APOTHECARIES.		
Thomas Quinn	do 1849-50	do
Richard Wilkins	do 1851-52	do
Samuel Wells	do 1853-54	do
Robert Harvey	do 1854-55	do
John Green	do 1856-57	do
William Day Stewart	do 1856-57	Mr. Kellie's Medal.
William Hamilton	do 1857-58	Johnstone Medal.
Jeremiah Trutwein	do 1860-61	do
Henry Whitwell	do 1861-62	do
NATIVE SURGEONS.		
J. Rajantheram No. 308.....	In 1853	Govt. Medal—Prize Essay.
2nd DRESSERS.		
E. Ailsworth No. 376.....	Session 1852-53	do
Moonesawmy No. 364.....	do 1853-54	do
S. Appala Nursiah No. 450	do 1856-57	do
T. Condasawmy No. 488.....	do 1858-59	do
P. M. Sadagopah Naik No. 519.....	do 1859-60	do

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